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CONCEPTS IN SOCIAL ARITHMETIC FOR THE EIGHTH GRADE LEVEL

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IT is well known that there are two distinct types of arithmetic, namely, informational and computational. Judd,[1] Buckingham,[2] and Buswell[3] showed the desirability for greater emphasis on the informational type of arithmetic. This kind of arithmetic requires the understanding of number concepts. Computational arithmetic deals with the manipulation of numbers. This study is concerned with the informational phase of arithmetic as it relates to an understanding of certain concepts found in the social usages of business arithmetic.

The purpose of the study was to find the degree of accomplishment attained in mastery of certain concepts by the pupil when he had completed the eighth grade. A knowledge and usage of certain mathematical concepts may be considered a worthy objective of the teaching of mathematics. The National Committee on Mathematical Requirements mentioned as one of the disciplinary aims of the study of mathematics, " . . . the acquisition, in precise form, of those *ideas or concepts* in terms of which the quantitative thinking of the world is done."[4] The trend for inclusion in the curriculum of the teaching of concepts is illustrated by the course of study for Cleveland, Ohio. "In this outline three objectives are listed for each semester, one of which is the use of mathematical concepts in social situations."[5]

[1] Judd, Charles H. "Informational Mathematics Versus Computational Mathematics," *The Mathematics Teacher*, XXIII (April, 1929), 187-96.

[2] Buckingham, B. R. "Informational Arithmetic," *The Tenth Yearbook of the National Council of Mathematics Teachers* (Bureau of Publications, Teachers College, Columbia University, 1935), pp. 51-73.

[3] Buswell, G. T. "The Relation of Social Arithmetic to Computational Arithmetic," *The Tenth Yearbook of the National Council of Mathematics Teachers* (Bureau of Publications, Teachers College, Columbia University, 1935), pp. 74-84.

[4] *Reorganization of Mathematics in Secondary Education* (The Mathematical Association of America, Inc., 1923), p. 9.

[5] Lide, Edwin S. *Instruction in Mathematics*, Bulletin 1932, No. 17 (Washington: Government Printing Office, 1933), p. 10.

Butler[6] made a study of the ability of pupils in the seventh, eighth, and ninth grades to find the degree of mastery achieved with a list of 63 concepts included in his test. These concepts were taken from the list of objectives for the junior high school as formulated by Schorling.[7] They were drawn from the general field of elementary mathematics in arithmetic, algebra, and geometry. In this present study, the terms used were selected exclusively from arithmetic.

CONSTRUCTION OF THE TEST

There are 68 different concepts in the test considered in this study. These concepts were taken from the seventh and eighth grade arithmetic texts of thirteen different series. In twelve of these series, the work for the seventh and eighth grades was combined into one book. This book constituted the third of a three-book series. For the one exception, the series was composed of separate books for each grade. Before a term or concept was selected for use in the test, it must have appeared in a majority of the textbook series. Hence, it was necessary for a concept to be used in at least seven different texts. The underlying assumption was that a given concept should be learned by the completion of the eighth grade, if a majority of the writers of textbooks considered the term of sufficient value to include it in their texts.

The terms used in this test were taken from the topics listed in Table I. These topics included most of the informational material offered in the different textbooks studied.

TABLE I

CLASSIFICATION OF THE CONCEPTS

Classification	Number of Concepts
Banking	27
Stocks and Bonds	15
Taxation	10
Insurance	7
Merchandising	7
Building and loan associations	1
Installment buying	1
Total	68

Table I shows that almost 40 percent of the concepts were listed under the classification of banking. It was difficult to determine the exact classification of some of the concepts. In a few cases a concept could be placed in several different groups. The concept *investment*

[6] Butler, Charles Henry. "Mastery of Certain Mathematical Concepts by Pupils at the Junior High School Level," *The Mathematics Teacher*, XXV (March, 1932), 117-72.

[7] Schorling, Raleigh. *A Tentative List of Objectives in the Teaching of Junior High School Mathematics*, (Ann Arbor, Michigan: George Wahr, 1925), pp. 101-102.

was catalogued under *stocks and bonds,* but this same term could just as readily have been listed under the classification of *banking.* In cases of the type described, it was a matter of judgment with the writer where a given concept should be classified.

The selection of the textbook series used in this study was based on two things: first, a representative sampling of the general field of arithmetic; second, recency of publication of the series. When these two criteria were applied, thirteen different series were selected. Applying the first criterion, nine textbook series were chosen and used in a former study by the writer.[8] The remaining four series were chosen because they had been published recently or were widely used in the State of New Jersey. Three of the four texts in the latter group were copyrighted in 1930 or later. The fourth text had a copyright date of 1928, but was included because the series to which it belongs is quite extensively used in the public schools of New Jersey.

Each textbook used in this study was coded. The code letter and the year of publication for each text is shown in Table II. In the same table are given the number of different concepts found in each text, the number of those concepts which were used in this test, and the number of concepts that were found in only one text.

TABLE II

THE CODE LETTER AND YEAR OF PUBLICATION FOR EACH TEXT, THE NUMBER OF DIFFERENT CONCEPTS FOUND IN EACH TEXT, THE NUMBER OF THOSE CONCEPTS WHICH WERE USED IN THIS TEST, AND THE NUMBER OF CONCEPTS THAT WERE FOUND IN ONLY ONE TEXT

Code Letter	Year of Publication	Total number of concepts in text	Number of concepts used in test	Number of concepts found in only one text
A	1925	92	50	4
B	1927	83	45	8
C	1927	98	51	7
D	1928	81	52	1
E	1929	57	38	2
F	1927	93	57	3
G	1930	96	58	0
H	1931	104	54	13
K	1928	88	54	3
L	1928	113	60	7
M	1932	105	50	10
N	1931	92	49	8
P	1930	95	59	4

Table II shows that there was very great variation in the number of concepts given in each of the different texts. Series L contained almost twice as many concepts as Series E. There was much less variation in

[8] Grossnickle, Foster E. "Practice Material in the Estimation of the Quotient in Long Division Found in Current Textbooks," *Elementary School Journal,* XXXIII (October, 1932), 130-41.

the number of concepts selected from each series for use in the test. On the other hand, there was very little uniformity in the exact terms given in each text. To illustrate, the 50 concepts taken from Series A were not identical with the 50 taken from Series M, although the number of concepts is the same. From a list of 68 concepts in the entire test, there were only fourteen which were common to all of the texts. These concepts were: *bond, check, commission, common stock, compound interest, face of note, insurance, loss, overhead, par value, preferred stock, premium, promissory note,* and *tax rate.* Table II also shows the number of concepts which were found in only one text. Series H was outstanding in this respect, as it contained thirteen concepts which were found in no other text studied.

It is unfortunate that some standard phraseology cannot be agreed upon to express a given concept. A few illustrations will show the diversity of terms used to express a given concept. The term *marked price* was found in different texts under the caption *marked price, list price,* and *catalogue price. Successive discounts* was given as *successive discounts, chain of discounts,* or a combination of these terms. Some texts called a stockholder in a company a *shareholder.* Of course each is correct, but it would be less difficult for instructional purposes if a standard term could be used to express a given concept.

There were four terms which were found in all of the texts but which were not used in the test. They were: *bank, interest, insurance policy,* and *tax.* The concepts *bank* and *interest* are so well known that it would have been useless to include them in a test. Furthermore, *interest table* was included as part of the test. As for *insurance policy* and *tax,* it would not have been expedient to have included two more items which are almost identical in meaning with the terms tested. The latter were *insurance* and *tax rate.*

In all of the thirteen textbook series studied, there were 226 different concepts given. On the other hand, there were 70 different terms which occurred in only one of the thirteen texts. Text G did not contain any concepts which were not offered in some of the other series. These data show very conclusively that there is much variability in the number of different concepts found in the respective textbooks analyzed in this study.

Smith and Reeve[9] have a list of terms which they call "Important Concepts in Business Arithmetic." From their list there were 42 concepts which are included in the test used in this study.

[9] Smith, David Eugene, and Reeve, William David, *The Teaching of Junior High School Mathematics* (New York: Ginn and Co., 1927), pp. 43-44.

After the items for the test were selected, the next step was to decide upon the type of measuring instrument to be devised. A group test of a four-choice multiple response type was chosen.

In the first edition of the test, the 68 items were arranged in alphabetical sequence. In September, 1932, this form of the test was given to two groups, consisting of 145 and 168 students in the beginning ninth grades, in two nearby high schools. Since these students had just completed the eighth grade in the previous June, it was assumed that their knowledge of concepts should be about the same as that for students of the eighth grade level. The items were then arranged in order of difficulty or lack of mastery, according to the results from the scores of these 313 students.

After the items were arranged according to difficulty, the test was given to 120 freshmen and 78 seniors in the teachers college where the writer is employed. The purpose of these scores was to find the coefficient of reliability. The scores on the even examples were correlated with scores on the odd examples. The Pearson Product-Moment Method for finding correlation was used. Then the reliability for the whole test was found by applying the Spearman-Brown prophecy formula. For the first group the coefficient of correlation was .898 and for the second group .905. At a later date, the scores from 104 eighth grade students were analyzed in the same manner, and this coefficient of reliability was found to be .912. Since these coefficients are approximately consistent, it may be concluded that the test has a reliability coefficient of about .90.

Due to lack of space, the test is not reproduced in this article.[10] The nature of the test can be seen from the sample question which follows. This question was the first one on the test. The pupil was instructed to select the best answer to complete the statement. The word in italics was the concept being tested. Sample: A person who owns one or more shares of stock in a company is called: (1) a salesman; (2) a *stockholder;* (3) the company's representative; (4) an officer in the company.

ADMINISTRATION OF THE TEST

The test was given only in schools which were organized on the 8-4 plan. The reason for this is evident when it is recalled that the concepts in the test were taken from texts which were constructed for a school of this kind. A test of the type constructed by Butler is better adapted for usage in a school system organized on the 6-3-3 basis, because his

[10] The writer will supply a copy of the test to anyone making a request for it.

test contains the concepts which are supposed to be mastered by junior high school students.

This test was given to 596 students in January, 1933, who had completed the grade during that month and to 741 students in June of the same year. In each case the groups had completed all of the work in arithmetic for the eighth grade.

The regular teacher of arithmetic in each school administered the test under the supervision of the writer. There was a time limit of 35 minutes for the test. This time limit was chosen because the time limit for the Butler Test[11] was 30 minutes. The test in this study is slightly longer than the Butler Test; hence it was assumed 35 minutes of working time would be ample. The results from the preliminary tests previously described showed that 35 minutes provided enough time for almost everyone to finish the test.

RESULTS OF THE TEST

The test was given in four different school systems in January and six in June. The school centers are coded *C* with a different subscript to represent each. The different schools tested in the middle of the school year are represented by a subscript letter; those tested at the close of the year are represented by a subscript number. The scores made by the students in each school center are given in Table III.

TABLE III

SCORES MADE ON CONCEPT TEST BY STUDENTS IN VARIOUS SCHOOL CENTERS

Code Number for School Center	Number of Cases	Mean	Median	Range
C_a	92	31.17 ± 0.442	30.67	18–45
C_b	174	41.16 ± 0.336	41.52	22–54
C_c	214	46.46 ± 0.395	47.13	30–63
C_d	116	44.22 ± 0.542	44.00	24–61
C_1	175	44.14 ± 0.311	44.93	26–61
C_2	294	44.52 ± 0.266	44.80	24–60
C_3	97	38.56 ± 0.410	37.77	24–57
C_4	103	42.87 ± 0.416	43.83	28–55
C_5	41	44.56 ± 0.587	45.00	32–57
C_6	31	44.29 ± 0.800	45.75	30–57

Table III shows that the scores made by students in different centers were very similar except in Schools C_a and C_3. The first of these was a large city school whose student body was composed almost entirely of foreign population. Furthermore, the writer learned from an interview with the teachers of arithmetic in this school that the socialized phase of mathematics was given little consideration in their classes. The policy

[11] *Ibid.*, p. 135.

TABLE IV

PERCENT OF MASTERY OF CONCEPTS ACCORDING TO CLASSIFICATIONS

CONCEPTS	CLASSIFICATION	PERCENT OF MASTERY
tariff	TAXATION	91.3
income tax	"	88.6
real estate	"	86.5
budget	"	79.2
internal revenue	"	74.6
ad valorem duty	"	71.8
personal property tax	"	64.0
assessed valuation	"	69.7
tax rate	"	53.4
specific duty	"	49.5
stockholder	STOCKS AND BONDS	95.6
stock certificate	"	90.4
corporation	"	88.7
investment	"	86.0
stock exchange	"	79.6
brokerage fee	"	79.1
coupon bond	"	74.6
stock dividend	"	73.0
preferred stock	"	70.6
market value	"	66.3
municipal bond	"	64.1
common stock	"	63.2
par value	"	49.6
bond	"	30.4
registered bond	"	12.3
deposit slip	BANKING	95.8
indorsement	"	94.4
time note	"	92.4
postal money order	"	91.3
check stub	"	90.1
check	"	87.3
face of note	"	85.3
date of maturity	"	85.0
interest table	"	84.5
promissory note	"	75.4
express money order	"	74.3
mortgage	"	68.5
traveller's check	"	66.4
collateral	"	59.3
amount	"	55.2
maker of note	"	53.3
bank discount	"	49.7
principal	"	49.0
negotiable	"	48.4
exact interest	"	46.6
proceeds	"	46.5
compound interest	"	44.5
capital	"	43.2
bank balance	"	40.4
payee of note	"	36.6
bank draft	"	29.5
demand note	"	20.3
beneficiary	INSURANCE	84.6
insurance	"	82.7
ordinary-or-straight-life policy	"	60.4
endowment policy	"	59.5
premium	"	55.2
limited-payment-life policy	"	42.6
term insurance	"	11.5
loss	MERCHANDISING	87.5
discount	"	55.8
commission	"	49.7
overhead	"	47.6
successive discounts	"	39.7
marked price	"	38.0
margin	"	16.6

of the school was to build skills in the fundamental operations. These are some of the possible reasons for the low scores. In the case of School C_3, the writer cannot give any explanation for the low scores made by the pupils from this center.

Table III shows that there was a small difference between the scores of the January groups and those of the June groups. The average score for the midyear group was 42.21 ± 0.240; for the June group the average score was 43.35 ± 0.166. The June scores were greater than the January scores. The obtained difference was such that the chances were 99.6 out of 100 that the true difference would exceed zero.

Next, a study was made to see whether sex was a factor in the score made on the test. The results showed that the scores made by the boys were superior to those of the girls. The two groups were rather evenly distributed in numbers. Out of a total of 1337 cases, there were 667 boys and 670 girls. The mean score for the boys was 43.64 ± 0.200; for the girls, 42.08 ± 0.210, indicating that there is a significant difference in the scores according to sex.

MASTERY OF EACH CONCEPT AND OF GROUPS OF CONCEPTS

Table IV shows the percent of mastery for each of the 68 concepts on the test. Percent of mastery means the percent of correct responses given to a concept. The different concepts were grouped according to difficulty under five classifications. These classifications were: taxation, stocks and bonds, banking, insurance, and merchandising.

There were two concepts which could not be grouped under any of the above classifications. The one was *building and loan association* and its percent of mastery was 76.8; the other was *installment buying* and its percent of mastery was 25.3.

To see the degree of accomplishment within the various groups, the mean percent of mastery of each classification was found. This value was the average of the percent of achievement for the different concepts within a particular classification. The average percent of mastery and the rank order for each group of concepts are given in Table V. The two groups which contained only one concept each are not included in Table V.

TABLE V

MEAN PERCENT OF MASTERY FOR GROUPS AND THEIR RANK-ORDER

Classification	Number of Concepts	Mean percent of mastery	Rank-Order
Taxation	10	71.9	1
Stocks and Bonds	15	68.2	2
Banking	27	63.4	3
Insurance	7	56.6	4
Merchandising	7	47.9	5

RELATION OF MENTAL AND CHRONOLOGICAL AGES TO MASTERY OF CONCEPTS

There are many factors which may affect a pupil's score on the concept test. Monroe and Engelhart[12] stated that there are three educative factors that affect pupil achievement. They are: teacher factors, general school factors, and extra-school factors. These three factors are difficult to control or measure; hence no attempt was made to measure their effect on the scores of the concept test. However, according to *a priori* reasoning, mental and chronological ages should affect a student's score on the test. Since chronological age is known and mental age presumably can be measured, a study was made to see to what degree a student's score was dependent upon these two variables.

In the school center coded C_1, the *Terman Group Test of Mental Ability, Form A*, was given to the group of 175 pupils who took the concept test. Each student's score on the concept test was correlated with his mental age expressed in months. Likewise, the score on the concept test was correlated with the chronological age expressed in months. The Pearson r between test score and mental age was $.795 \pm .0185$ and between test score and chronological age was $-.505 \pm .0376$. When chronological age was held constant, the correlation between test score and mental age was $.745 \pm .023$. When mental age was held constant, the correlation between test score and chronological age was reduced to $-.288 \pm .046$.

It was found that $r = .795 \pm .0185$ when T.S. (test score) and M.A. were correlated. When the effect of C.A. was held constant, this correlation was reduced only slightly, from .795 to .745. These data suggest that mental age bears a direct relationship to pupil achievement on the concept test. The data further show that this relationship was not much affected by chronological age.

The negative correlation between achievement on the concept test and chronological age is difficult to interpret. When mental age was held constant, the size of the correlation coefficient between T.S. and C.A. was greatly reduced. It would be fallacious to arrive at a literal interpretation concerning the negative correlation between T.S. and C.A. If the usual interpretation were given to negative correlation in this case, it would mean that the older a pupil became, the less he knew about the concepts included in this test. The writer is in complete accord with

[12] Monroe, Walter S., and Engelhart, Max D. *Experimental Research in Education*, Bulletin No. 48 (College of Education, University of Illinois, 1930), p. 30.

the interpretation given by Butler to a similar correlation between the same traits in his test of mathematical concepts. Butler concluded, ". . . one can hardly infer that growing older causes a given pupil to lose his mastery of some of the concepts. Rather, one may infer that of a large group of pupils, all of whom have attained a given mental age, those who have attained this mental age early in life will be likely to have attained mastery of more of the mathematical concepts than those who have attained the given mental age after a longer chronological period." [13]

When C.A. was held constant and the correlation coefficient between T.S. and M.A. was determined, the coefficient was the same as if T.S. and I.Q. had been correlated. The correlation coefficient between the two latter traits was found to be .745. It was a positive but not a perfect correlation coefficient. A coefficient of this type would result if the pupil of low I.Q. gained a mastery of concepts at a slower rate than he gained in mental age. On the other hand, the pupil of high I.Q. gained in mastery of the concepts at a faster rate than he gained in mental ability as measured by intelligence tests. Therefore, it is reasonable to conclude that ability to achieve mastery of concepts is in direct ratio to the development of mental ability. Hence, a pupil with a high I.Q. should achieve mastery of concepts at a very rapid rate, while a pupil with a low I.Q. should require a relative-long period for attaining this achievement. As to chronological age, the data do not warrant the conclusion that a pupil's test score will be much affected by this trait.

When the coefficients of partial correlation had been determined, it was possible to use these ratios in a regression equation for predicting a pupil's most probable score on the concept test. If X_1 = the predicted score, X_2 = M.A. in months, and X_3 = C.A. in months, the equation became:

$$X_1 = 0.763X_2 - 0.288X_3 - 39.55$$

By substitution of values for C.A. and M.A. in the prediction equation, a pupil's most probable score on the concept test may be determined. The relative size of the coefficients of X_2 and X_3 shows that the trait X_2 (mental age) is a more potent factor in determining a pupil's score than the trait represented by X_3, or chronological age.

SUMMARY

A list of 68 mathematical concepts in the business usages of arithmetic was found by analyzing thirteen different textbook series for the

[13] *Ibid.*, p. 163.

seventh and eighth grades. These concepts were grouped as follows: *banking, stocks and bonds, taxation, insurance, merchandising, building and loan associations,* and *installment buying.* Each of the concepts was used in at least a majority of the texts studied. These concepts were incorporated in a four-response multiple-choice test. After a series of preliminary tests had been given to determine the relative difficulty of each example, the examples were arranged according to the results from these tests. The test was then given to 1337 pupils who were completing the work of the eighth grade in schools organized on the 8-4 basis. There were 596 students who took the test in January, 1933, and 741 in June of the same year. The test was given in ten centers in which the population of the city ranged from less than 5000 to over 300,000.

The results from this study showed:

1. There is no standard phraseology to connote certain different concepts. In some cases the same concept was expressed by as many as four different terms in various texts.

2. There is no agreement among the writers of arithmetic texts as to what concepts are most essential. From a list of 226 concepts found in 13 different texts, there were only 14 which were found in all of the texts.

3. The average performance of the boys was significantly greater than that of the girls.

4. The average score on the concept test for the pupils who completed the eighth grade in June was greater than for those who finished the same grade in January. The chances were 99.6 out of 100 that the true difference between the groups was greater than zero.

5. The average score made by the 1337 pupils who took the test was 42.85 ± 0.141. The median score was 43.20. The range of the scores was from 18 to 63.

6. In eight out of the ten school centers tested, the mean scores showed little variation. However, in the two exceptions, the mean scores were much below the average in the other eight.

7. The score which a pupil made on the concept test was directly related to his mental age. Chronological age had little effect on the ability of a pupil to achieve mastery of the concepts included in this test.

8. There was very marked diversity in the mastery of different concepts. The range of mastery expressed in percent was from 11.5 to 95.8.

CONCLUSION

The results from the test showed that the level of attainment in mastery of concepts in most of the schools was about the same. Yet in only

one of the schools was the average attainment more than two-thirds of the total possible. If the judgment of the textbook writers is a valid criterion for the worth of a concept, then a class which has a working knowledge of only two-thirds of the mathematical terms from an assigned list, has not made a record of achievement that merits much praise. However, the major part of the criticism for the low level of achievement of most classes should be placed upon the writers of textbooks. The concepts which a class will meet in daily arithmetic practice are largely determined by the text it uses. If a standard list of concepts could be established which would constitute a core for minimum essentials, the task for both teacher and pupil would be greatly simplified. The writer is not proposing that the 68 concepts given in this test should constitute that core. However, until a better criterion is found for selecting a list of concepts for minimum essentials, it is suggested that this list is suitable for a basic group of terms.

If the 68 concepts used in this test were chosen for a list of minimum essentials, it would not exclude the introduction of other concepts for enrichment purposes. Table II showed that most of the texts analyzed contained many more concepts than the number included in this test. Thus, if a teacher knew what concepts should be considered basic or essential, it would be relatively easy to provide others for enrichment purposes to meet the needs of individual differences.

One of the great needs in teaching concepts is to provide opportunities for acquiring a more complete understanding of these terms. As an illustration, consider the concept *compound interest*. It was mastered by only 44.5 percent of the students who took the test. The writer feels quite certain that if the students had been given a selection of responses one of which was *interest on interest*, the percentage of correct answers would have been much greater. *Compound interest* is commonly defined as *interest on interest*. In this test the selection of choices was limited to a function of *compound interest*. In other words, the pupil had to know more than a perfunctory definition of the concept. To teach a concept thoroughly, enriched experiences about the application of the term must be provided. Suppose it is desirable to teach the concept *commission*. Some of the topics considered when commission is taught should be: (1) why is commission given; (2) under what conditions is it more profitable to work on commission than on a fixed salary, and vice versa; (3) what are the factors that operate to determine the rate of commission paid; (4) what are the factors which determine the

amount to be earned by a person working on a commission basis. These and similar questions are not provided in arithmetic texts. The teacher must either supply material of this type, or rely solely upon the extremely limited treatment offered in a textbook. Under such conditions it is apparent why the average achievement on the test was only about 60 percent of the total number of concepts. Provision for more adequate learning of concepts would represent a distinct advance in the teaching of informational arithmetic. A significant contribution can be made to the professionalization of subject matter in arithmetic by the teacher who collects and records various methods and materials for teaching concepts by providing enriched experiences for the pupils.

A topic which promises great possibilities for further research consists in determining the relationship between understanding of concepts and the ability to solve problems. *A priori* reasoning leads one to conclude that a pupil is seriously handicapped in problem-solving if the concepts used in the problems are unfamiliar to him. Hydle and Clapp[14] found that unfamiliar terms had a great effect on the difficulty of problems.

Kramer[15] also showed that unfamiliarity of terms made a difference in the accomplishment of pupils in solving verbal problems. In the latter study, the group which solved problems containing only familiar vocabulary gained 6.5 percent more than the group which solved problems containing unfamiliar terminology. At present no test of problem solving is adequate to measure the relationship between knowledge of concepts and ability to solve problems.

Brueckner found that the correlation between computational ability and understanding of quantitative relationships is only .417. He concluded, "... a pupil's rating on the computational test is not a reliable index of his ability as measured by the vocabulary or quantitative relationship test."[16] Brueckner found that there is a higher correlation between problem solving ability and vocabulary. However, much more experimenting needs to be done in the construction of reliable tests to

[14] Hydle, L. L., and Clapp, Frank L. *Elements of Difficulty in the Interpretation of Concrete Problems in Arithmetic* (Madison, Wis.: Bureau of Educational Research, University of Wisconsin, 1927), pp. 35-41.

[15] Kramer, Grace A. *The Effect of Certain Factors in the Verbal Arithmetic Problems Upon Children's Success in the Solution* (Baltimore: The Johns Hopkins Press, 1933), pp. 58-61.

[16] Brueckner, Leo J. "Diagnosis in Arithmetic," *The Thirty-Fourth Yearbook of the National Society for the Study of Education* (Public School Publishing Co., 1935), p. 273.

measure a knowledge of concepts. Then the relationship between this knowledge and the ability to solve problems can be determined.

Finally, the data in this study justify the statement that the concepts found in some of the social usages of business arithmetic are not well known by students who have completed the eighth grade. The solution of the problem does not necessarily lie in teaching less computational arithmetic, but it most certainly implies that more and better informational arithmetic must be taught. To achieve this, richer experiences in the uses and applications of the concepts must be provided for the pupil.

A HYPOTHESIS FOR NON-ORAL READING: ARGUMENT, EXPERIMENT, AND RESULTS

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MANY converging lines of reasoning, and much experience with oral and silent reading during the past eighteen years have led the writer to the formulation of a hypothesis favoring non-oral methods in teaching beginning reading. Really effective skill in reading is an ideal for education from the first elementary grade to the university. The failure to attain a reasonable part of this ideal by the time pupils enter the high schools adds to the difficulties of secondary education. The experiment here reported is concerned with a radical change in the method of teaching beginning reading. The usual procedure in the first grade is firmly to fix oral reading habits from the beginning. The intelligent upper grade teachers find that the children are saying the words to themselves when reading silently, and set out to uproot that habit. It is obviously uneconomical to have lower grade teachers build these habits with so much solicitude, and then to set upper grade teachers to work with no less solicitude to try to eradicate them.

The method used in this experiment requires that in the first grade the reader shall not speak aloud or even speak inwardly when his eye takes in visual symbols in reading. In getting thought directly through the eye with no oral reactions whatever, the children acquired both a comprehension and a speed at least equal to present standards. The experiment also indicates that when taught non-orally reading will be meaningful to vast numbers who would otherwise suffer from various reading disabilities. The visual symbol itself is meaningful, and brings immediately the appropriate response. The writer believes that a vocal translation of the symbol retards both comprehension and speed of reading.

ARGUMENT

It is true that there are many exercises in the modern teaching of reading which are entirely silent. Labeling and directional exercises are employed, and there is much silent reading. In first grade it is often called silent reading if a child looks at a line of a story or nursery rhyme, and then looks away from the print and repeats the line. Or the child may read a sentence or paragraph, and be required to answer questions as to its meaning. What happens when the child reads a text in these cases is fairly certain. He says it inaudibly to himself. This process is

infelicitously called silent reading. Silent reading is an inexact term, being applied equally to the reading of pupils carrying the unnecessary burden of suppressed oral response, and to the completely non-oral reading of other pupils—few as they may be—for whom the printed language is immediately meaningful. The two are a world apart. Instead of silent reading, we should perhaps use the term "inaudible reading."

Inner Speech Retards Speed and Comprehension.—A result of oral method may be that in the child's most impressionable period the spoken language and the printed language are linked together—printed word to spoken word—almost inseparably, so that he may never thereafter read a printed word or sentence without at the same time saying it by throat or lip movements. In all of such cases visual and oral symbols are immediately linked, and many difficulties in getting the meaning may follow.

One such difficulty is that reading becomes a two-step process, in which the meaning is widely separated from the printed words, instead of being immediately fused with them. Through heightened consciousness of the process of pronouncing them, printed symbols are apt to be denuded of meaning. The saying of a word at the moment of eye fixation on it drains off the attention to the spoken word. A high school boy requested to read aloud a page of French acquitted himself creditably. Then he was asked to close his book and tell what he had read. He said, "I really don't know; I was watching my pronunciation." Children learning to read by the oral method have to watch their pronunciation too, and the result is the same,—loss in comprehension. Intelligent teachers well understand that the saying of the words read cannot be accepted as evidence of comprehension.

Another consequence of the oral reading habit is that it slows up the reading. The vestigial utterance that accompanies silent reading in all but a few fortunate children or adults can proceed but slowly as compared with the possible speed at which the eye can be trained to take in printed language.

In this experiment, attention from the beginning is continually fixed on phrases and short sentences, rather than on single words, not alone for the sake of speed, but also because a large proportion of the words used in print are almost meaningless when taken alone. The bare word "in," for example, carries little meaning to a child, yet as a part of a phrase it is readily comprehended. For the teacher of reading to deal with such words separately is a futile and retarding process. Meanings do not reside in single words, but in the sweep of phrases and sentences.

THE EXPERIMENT

In September, 1935, the writer set up an experiment in a beginning first grade room of one of the Chicago experimental schools, and supervised it with the able help of the principal for the entire school year. The experiment was undertaken to determine whether it is possible to teach children to read not less well, as measured by standardized tests, by purely non-oral methods than by current oral methods. If this could be done, the children would not only have met the standards set up for the grade, but presumably would in addition have acquired reading habits of life-long value.

No oral reading whatever was permitted. Parents were asked not to have the children do any oral reading at home. No word was ever pronounced by the teacher while the printed word was before the children, nor was the child ever told orally a word which gave him difficulty. The techniques had to be improvised. Labeling common objects with the aid of word-and-picture dictionaries was a beginning, but simple phrases and sentences were soon in use. The reading lesson was silent, but no word, phrase, or sentence was ever employed which did not actually function in the situation. The attempt was to have children use print for actual communication, so that printed or written language could be learned precisely as a young child learns to comprehend spoken language. The teaching required a great variety of materials, such as miniature home furnishings, farm objects, and the like, as well as much material printed on cards and strips, either with rubber-type, or with crayon in manuscript writing. Little projects were devised which two or three children working together at a table could carry on without speech, but with much use of printed word, phrase, and sentence cards. As far as possible, the children were not even to think that printed words were ever to be spoken. The print always carried real meanings to be acted on, but not to be spoken.

The seat-work, which was fully as important as the class-work in teaching the non-oral reading habit was of the self-help type, devised by the writer some years ago.[1] This work is purely individual. Each child masters a piece of work in his own time, and passes on to the next. Each progresses as rapidly as his ability permits. In a large degree the rapid acquisition of a non-oral reading comprehension vocabulary depended on this work.

[1] Projects in Silent Reading for First Grade. The Plymouth Press, Chicago.

Oral exercises were given intensively and freely, but in separate periods when no reading was done. All the objects and projects to be later employed in reading work were discussed in these periods, and the very words to be later met in print were used. But the spoken word was employed in one period, and the printed word in another. The two were never brought together, and consequently no oralizing habit was formed.

By the time any child was interested in books, he was free to browse in the interesting readers and other simple books to which the children had access. They were now astonished to find that they could read in books, and gained reading skill by leaps and bounds. All reading was silent and individual, and done voluntarily, just for the pure fun of it.

Near the end of the year, the principal sent in the results of the Gates Primary Reading Test, which had been administered to the class. The report was so unexpectedly high that the writer requested Miss Grace Munson, Ph.D., Director of the Bureau of Child Study, to have one of her trained staff administer another reading test to this experimental group and to two other groups selected for comparison. The Metropolitan Primary Reading Test was administered, and the results agreed closely with those of the Gates test. Dr. Munson's statistical analysis and interpretation of the data follows.

RESULTS

A Comparative Study of Three Groups in Grade I Reading Achievement. Three groups of 1A children were tested in June, 1936, the ninth month of the school year, when the required reading level, according to the course of study, was grade 1.9. Two groups were selected for comparison with the experimental group to see if the goal of the experiment had been realized, i.e., "to teach children to read not less well by purely non-oral methods than by current oral methods."

Group A was taught by the McDade non-oral reading method as described above. Silent reading individual mastery units, used as work material, allowed each child to work at his own level and rate of learning.

Group B was taught by an oral method which emphasized phonics. The teacher describes the method as starting with exercises in ear training followed by identification of vowel and consonant letters, presented first separately with drill on sounds as clues to the identification of words which could later be analyzed phonetically. The method was characterized by much oral drill, intensive exercises in phonics, and oral reading in recitation. The customary work book materials were used, as well as

work exercises devised by the teacher. No silent reading individual mastery units were used. The children worked in ability groups, not individually. The teacher of this group has made a specialty of the phonics method and considers it superior to all others.

Group C was taught by a general method of oral reading in which the use of phonics was not emphasized. The teacher used the methods of a basic textbook series with chart work, flash-card word drills, and oral reading recitation. Silent reading was taught with the customary work book materials and in class recitation in connection with oral reading. No silent reading individual mastery units were used. The children worked in ability groups, not individually.

The selection of Groups B and C for comparison was not planned until the end of the year. These groups cannot be treated as control groups, although there are a sufficient number of points of equivalence to justify comparison. The teachers of all three groups were well trained, experienced, energetic, and devoted to the method used. All three groups of children were tested by the same expert examiner within a period of three days and with the same tests,—Kuhlmann-Anderson, the first half of grade 1 for intelligence, and Metropolitan Achievement Battery Primary I, for average reading score. Means are practically the same in each group,—around C.A. 7 years, M.A. 7 years, 6 months, and I.Q. 107 (see Table I). Groups A and B had 40 children each and Group C, 50 children. The larger membership of Group C may have been a contributing factor in its results.

The individual test results and interpretations together with other pertinent data for each group are presented in Charts A, B, and C. The charts are arranged to show graphically the general pattern of the data on reading scores with the accompanying data entered for purposes of interpretation. Each vertical column carries the data on an individual child. In each column C.A. (C), M.A. (M), and individual score in reading (—), are plotted to the scale of reference at the left side of the chart. The pupils are ranked in reading scores beginning with the highest score at the right side of the chart. At the top of each child's column are entered, (1) C.A., (2) I.Q., (3) M.A., (4) deviation from expectancy, (5) M.A. grade expectancy (see scale of reference at left side of chart), (6) average reading score, and (7) rank in reading score. A child's deviation from expectancy is the difference in tenths of a grade between his M.A. grade expectancy and his actual reading score.

The scale of reference at the left side of the chart was constructed on

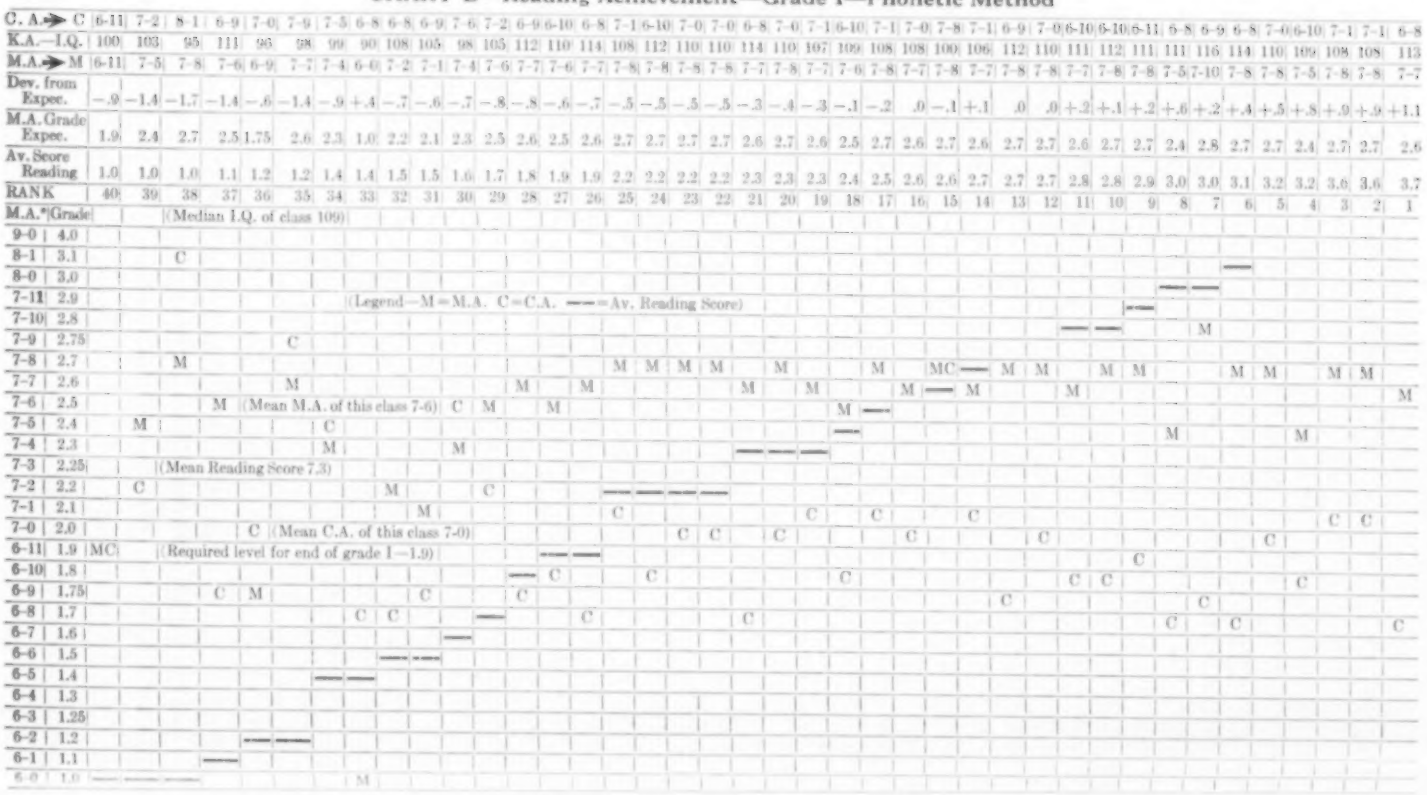
CHART A—Reading Achievement—Grade I—Non-Oral Method

the assumption that under ideal conditions, a normal child would start in grade 1B (1.0) at 6 years C.A. and 6 years M.A., and would advance one grade in one year. Since 12ths of years must be scaled to 10ths of grades, a buckling of the age scale occurs at certain points, introducing occasional negligible errors in the plotting of C.A.'s and M.A.'s. The M.A. grade expectancy is calculated by this scale.

Chart A. Interpretation. Chart A shows all pupils meeting or exceeding the grade requirements. The mean score (grade 2.65) is 0.75 grades above the requirement (grade 1.9) and is 0.15 grades above the mean M.A. grade expectancy (grade 2.5). The efficiency of the group as a whole is slightly greater than 100% on the basis of median M.A. grade expectancy, and is 183⅓% on the basis of the course of study requirements. Inspection of individual scores shows no child failing, while 37 of the 40 pupils exceed the grade requirements, the excess ranging from 0.2 grade to 1.4 grade. The pupils with the lowest scores have at least met the course of study requirements, while the pupil with the highest score reads at a grade 3.3 level. Twenty-two pupils exceed their M.A. grade expectancy, while 17 fall short of their M.A. grade expectancy. Pupil No. 38, with reading score of grade 1.9 fails to reach his M.A. grade expectancy (grade 2.75) by 0.85 grades although he meets the grade requirements (grade 1.9). His chronological age (7 years, 1 month) is normal for the grade and his I.Q. (109) would indicate a rate of learning that exceeds the normal rate. He is inefficient in the use of his intelligence, but he is not a "failure." Pupil No. 32, with reading score of grade 2.4, exceeds his M.A. grade expectancy (grade 1.75) by 0.65 grades. If the I.Q. is valid, he shows remarkable efficiency. As pupils in Group A passed on into the next year's work there were no repetitions in grade and double promotions were made only for well-prepared over-age children who would profit by adjustment with a more mature social group. The young pupils superior in mental age and in reading achievement were retained with their social equals and were provided with individual mastery work materials according to their academic needs. The individual mastery work materials obviate the use of double promotions or repetitions of grades as devices for academic adjustment. The educational adjustment of the children in Group A as measured by test results would seem to meet the modern ideal of democracy in education, i.e.: All children have equal rights to the efficient development of their individual capacities.

Chart B. Interpretation. Chart B presents a contrasting picture. Ten pupils fall definitely below the course of study requirements. Of these,

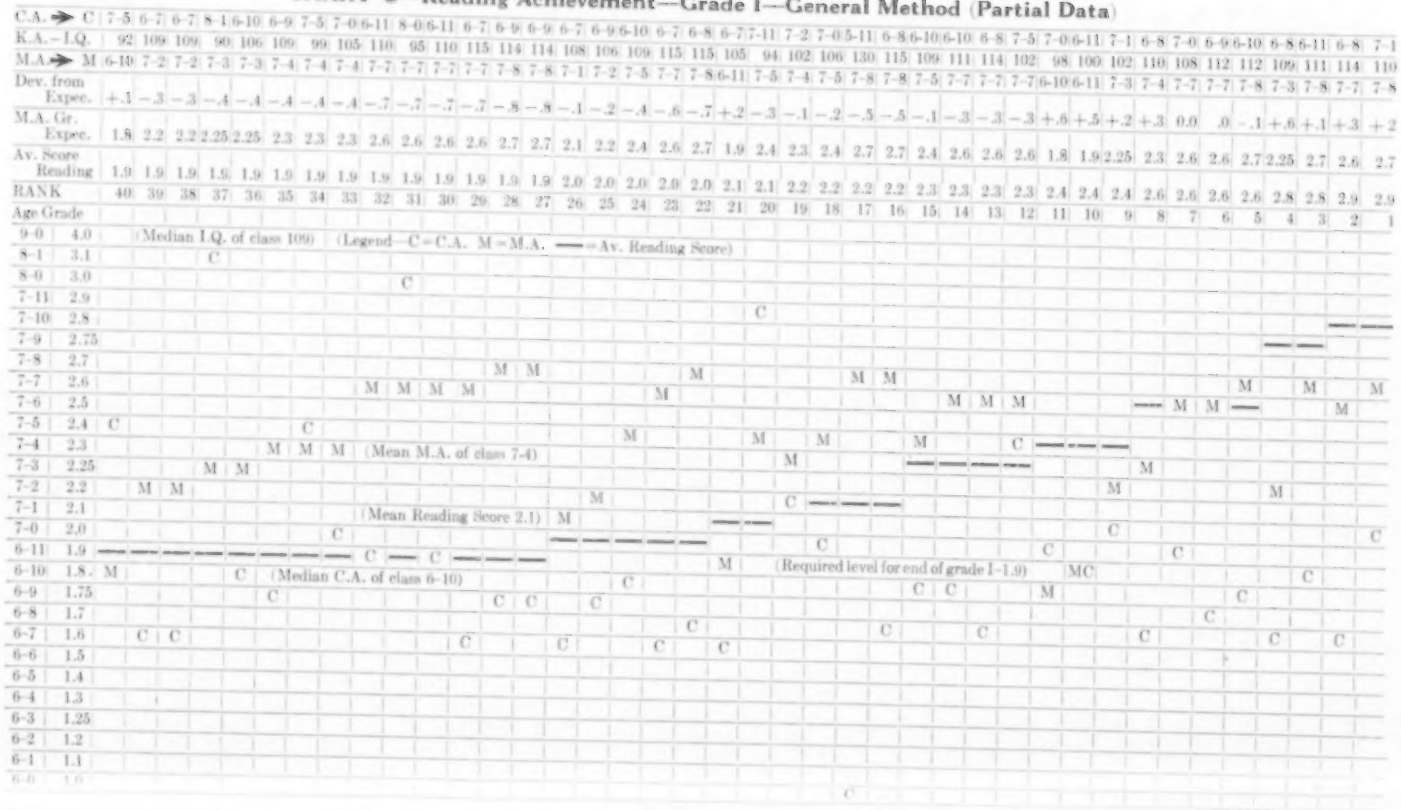
CHART B—Reading Achievement—Grade I—Phonetic Method



only pupil No. 33 has a mental age level to explain the low score. Pupil No. 38 presents a picture of extreme unadjustment. With his C.A. at 8 years, 1 month, a level suitable to entering grade 3B, with his M.A. grade expectancy adequate for entering grade 2A, and with a fairly normal rate of learning, I.Q. 95, he was unable to make a score on the test. He had 142 days teaching this year by this oral phonetic method. His C.A. indicates previous school experience. Perhaps he is a true case of reading disability, or perhaps the methods have been wrong. There may be other deterring factors. He is scheduled to repeat the grade, and faces another semester in 1st grade, where he will be taught on a 1A level, although he has not yet achieved 1B reading. He is now stigmatized as a "failure," with the cards stacked against his future success. The adjustment for pupil No. 35 is almost as poor as that for pupil No. 38. Nine of the children at the low end of the graph were scheduled by the teacher to repeat grade 1A. The teaching in grade 1A, being a half year beyond their levels of achievement, may actually contribute to further retardation. These children have experienced the ignominy of failure. They have an excess of mental energy, which is being frustrated. Here are the beginnings of behavior problems, of habits of failure, and of weak academic foundations which already call for "remedial" work. Eighteen children at the upper end of the graph were recommended by the teacher for double promotion. All but one of these is young. They all have reading scores at or above entering grade 2A. No doubt they will be able to handle the mechanics of reading in that grade, but their comprehension in reading and in other subjects is likely to show weakness in comparison with the older children with whom they must compete. With precocious ability in reading mechanics they are likely to receive other double promotions in the primary grades. From this group then will come the class of young weak children of the grammar, junior high school, and senior high school levels. They have normal, or better than normal, mentality, but being so young neither the C.A. nor the M.A. will be adequate to the level at which they must struggle to succeed. Furthermore, the double promotions will have honeycombed their foundation in academic subjects, and they also will eventually need remedial treatment.

Means for Group B show a gap between reading score (grade 2.25) and M.A. grade expectancy (grade 2.5), which is not particularly serious. The mean reading score is 0.4 grades above the course of study requirements (1.9). The central measures would indicate efficiency if considered apart from the distribution pattern and the status of individual cases.

CHART C—Reading Achievement—Grade I—General Method (Partial Data)



Actually, only a third of this class is well adjusted educationally, and we may assume that even they are handicapped by habits of inaudible speech in silent reading and by inefficient eye movements. The method of teaching may be entirely responsible for the unevenness of the results. On the other hand, the teacher may have been ambitious for a showing of double promotions, concentrating her time and effort on the promising pupils and neglecting the others. Whatever the case, the chart pictures an uneven distribution of educational opportunity that is contrary to all the principles of democracy.

Chart C.—Interpretation. Chart C shows a situation lying between the two extremes represented in Charts A and B. The great majority of the children have attained the required level of reading. The teacher has done her duty as concerns the course of study. The general method has produced a fairly even front of achievements. On this basis the efficiency is 100 percent. Almost every child is reasonably well prepared to take the next step. There is little ignominy for failure but there may be frustration from unused mental capacity. Poor work habits may have developed in the children whose achievement falls far below M.A. grade expectancy, and we are reasonably sure that habits of inaudible speech in silent reading have been established. The mean reading achievement (2.09) falls 0.21 grades below the mean M.A. grade expectancy (2.3), but 0.2 grades above course of study requirements (grade 1.9). Chart C is a picture of mediocrity, but it fulfills an ideal of democracy which has dominated the American public schools in the past, i. e., equal opportunity for all, where "equal opportunity" means equal attainment of a common standard.

The data from the three groups are summarized, compared statistically and analyzed in Tables I, II, and III.

Table I.—Interpretation. Comparison of the three groups indicates that the differences in achievement as measured by the standardized tests, are statistically significant in favor of Group A which was taught by the non-oral method of reading and in which individual unit mastery work materials allowed each child to progress at his own level and rate of learning.

Although the means of C.A., M.A., and I.Q. are approximately the same for the three groups, the standard deviations indicate a greater variability in Group A over Group B with respect to age and brightness. Standard deviations of M.A. in Groups A and B indicate practically the same variability in the two groups. Contrast this with the variability of

TABLE I

SUMMARY

Equivalent Data on Major Factors

Groups	No.	Period of Instruct.	Grade Requirement	C. A. (months)		I. Q.		M. A. (months)		Mean M.A. Gr. Expect.
				M	σ	M	σ	M	σ	
A	40	9 mos.	1.9	84.7	5.41	107	7.54	90.3	3.69	2.5
B	40	9 mos.	1.9	84.1	4.83	107	5.91	89.9	3.85	2.5
C	50	9 mos.	1.9	83.2	4.76	106	8.45	87.9	4.25	2.3

Statistical Comparison of Results

Average Reading Score					Deviations from M.A. Gr. Expectancy				
M	σ	Difference $(M_A - M_K)$	Diff. P.E.Diff.		M	σ	Difference $(M_A - M_K)$	Diff. P.E.Diff.	
2.65 ± .04	.365				+.088 ± .041	.383			
2.25 ± .08	.764	.36 ± .09	4.0		−.254 ± .071	.662	.342 ± .082	4.2	
2.09 ± .04	.364	.52 ± .06	8.7		−.240 ± .042	.443	.328 ± .059	5.6	

the two groups in average reading score. The standard deviation of the reading scores is more than twice as great for Group B as for Group A.

The variabilities of Groups A and C in reading score are approximately the same as their variabilities in M.A., but the variability of Group B in reading score is more than twice as great as its variability in M.A.

The above facts suggest that in Groups A and C the majority of the children had achieved according to individual M.A. grade expectancy, unless the movements within a group cancelled each other to produce the apparent stability of the distribution patterns in going from M.A. to reading score. In Group B, however, a considerable number of the children seem to have failed to reach individual M.A. grade expectancy, while others seem to have been pushed beyond it.

Table II. Deviations of Individual Reading Scores from Individual M.A. Grade Expectancy. This table throws some light on the pattern of the apparent change or lack of change noted above, in the variability within each group, in going from M.A. to reading score.

In Group A, the mean M.A. of the gainers (7-5) is lower than the mean M.A. of the losers (7-8) by three months, but the average gain in reading score per gainer is higher than the average loss per loser and there are more gainers than losers. Both average gain and average loss

TABLE II

DEVIATIONS OF INDIVIDUAL READING SCORES FROM INDIVIDUAL M.A. GRADE EXPECTANCY

	Group A Mean M.A. Gr. Expect. = 2.50 Mean Reading Score = 2.65						*Group B* Mean M.A. Gr. Expect. = 2.50 Mean Reading Score = 2.25					
	N	%	Total Ind. Devia.	Mean Ind. Devia.	Mean M.A.	Mean I.Q.	N	%	Total Ind. Devia.	Mean Ind. Devia.	Mean M.A.	Mean I.Q.
AT EXPECT.	1	2.5			7-6	108	3	7.5			7-8	110
BELOW EXPECT. (Losers)	17	42.5	−5.0	−0.29	7-8	107	24	60	−17.0	−0.7	7-5	105.9
				−0.1(1) to −0.85(1)	7-4 (1) to 7-10(3)	85(1) to 117(1)				−0.1(1) to −0.9(3)	6-9(1) to 7-8(8)	95(1) to 114(3)
ABOVE EXPECT. (Gainers)	22	55	+8.6	+0.39 +0.05(1) to +0.8(1)	7-5 6-9(3) to 7-10(1)	106.6 84(1) to 118(1)	13	32.5	+6.4	+0.49 +0.1(1) to +1.1(1)	7-6 6-0(1) to 7-10(1)	109 90(1) to 114(1)
TOTALS	40	100	+3.6	+0.10	7-6	107	40	100	−10.6	−0.21	7-6	107

	Group C Mean M.A. Gr. Expect. = 2.30 Mean Reading Score = 2.09					
	N	%	Total Ind. Devia.	Mean Ind. Devia.	Mean M.A.	Mean I.Q.
AT EXPECT.	2	4			7-7	110
BELOW EXPECT. (Losers)	34	68	−16.5	−0.49	7-5	108
				−0.1(4) to −1.4(1)	7-1(1) to 7-8 (6)	90(1) to 130(1)
ABOVE EXPECT (Gainers)	14	28	+4.5	+0.34 +0.05(1) to +0.6(1)	6-11 6-3(6) to 7-9(2)	102.8 87(1) to 114(1)
TOTALS	50	100	−12.0	−0.15	7-4	106

are comparatively small. The mean I.Q. of the gainers is very nearly the same as the mean I.Q. of the losers, and both are practically the same as the mean I.Q. for the entire group. We might conclude that neither the high I.Q.'s nor the low I.Q.'s were either favored or penalized in the methods used and that the majority of the children in the group achieved within narrow limits of M.A. grade expectancy, irrespective of their I.Q. The apparent stability in the distribution pattern of M.A. and reading scores in Group A seems to be a real one.

In Group B, the mean M.A. of the gainers and the mean M.A. of the losers are practically equal and are about the same as the mean M.A. of the group as a whole. The average loss of the losers is much greater than the average gain of the gainers and the number of losers is greater than the number of gainers. Mental age seems not to have been an important

factor in the distribution of losers and gainers. The mean I.Q. of the gainers is noticeably higher than the mean I.Q. of the losers. It would seem that the higher I.Q.'s tend to be the gainers, and the lower I.Q.'s tend to be the losers. In view of the marked increase in the variability of the group in reading score over M.A., we might conclude that the methods used have favored the higher I.Q.'s (the fast learners), and that the increased variability in reading score occurred on the average by retarding the lower I.Q.'s and accelerating the higher I.Q.'s with little regard for the highness or lowness of the M.A.'s at either I.Q. level.

In Group C, the mean M.A. of the gainers is markedly lower than the mean M.A. of the losers. The loss per loser is greater than the gain per gainer and there are many more losers than gainers. A majority of both higher I.Q.'s and higher M.A.'s seem to have been among the losers, while a majority of the lower I.Q.'s and lower M.A.'s seem to have been among the gainers. In view of this cancelling effect we may conclude that the apparent stability in the group was not a real one.

The criteria for comparison of the three groups have been average reading score, M.A., and I.Q. on the tests administered. There are many other criteria which should be investigated in order to prove the hypothesis for non-oral reading. Reading readiness should be determined for each child at the beginning of the semester in so far as it can be determined, personality characteristics should be noted, and deterring factors should be isolated and allowance made for their effects. At the end of the semester the various skills in reading should be studied separately and eye movements should be photographed.

Whatever the factors may be which have produced the contrasts between the three groups studied, we cannot hesitate to choose Group A as presenting the most desirable situation with respect to educational adjustment according to individual differences. Certainly the results have far surpassed the modest goal of the experiment: "To teach children to read not less well by non-oral methods than by current oral methods," if we judge by the scores on the standardized tests, and if groups B and C are representative of current oral methods. We believe that the non-oral method used with Group A has been the determining factor in its superiority over the other two groups.

SUMMARY

A year's experiment in a Chicago school was carried on to determine the possibility of teaching beginning reading without any oral reading whatever. The experiment was planned on the hypothesis that beginning

reading taught orally is securing unsatisfactory results for two chief reasons: (1) by centering attention on words and their utterance, meanings are obscured; and (2) the reading rate of persons who learn to read by the oral method is slowed to the speed of inner speech. Those who can free themselves from the unfortunate habit of inner speech can read at many times their former rates; therefore, it is wrong ever to have fixed the habit on them. A beginning first grade class was taught for a year by a completely non-oral method. Tests at the end of the year showed that the oral method was not necessary for the successful teaching of reading to this class. In achievements measured by the tests, the pupils compared more than favorably with classes taught by other methods. Every child reached or exceeded the course of study requirements, and the majority reached or exceeded mental age grade expectancy, for the most part, irrespective of I.Q. The mean reading score exceeded the mean mental age grade expectancy, and surpassed the course of study requirement (grade 1.9) by 0.75 grades. The non-oral method seems to serve both fast and slow learners. It is believed, though not proven, that in certain types of achievement not measured by these tests, such as the establishment of reading habits that will not later call for remedial work, the class is in a better position to increase in reading comprehension and speed than the tests indicate.

CONTINUATION OF THE EXPERIMENT

With the approval of Dr. William H. Johnson, Superintendent of Schools, the experiment has been carried on since September, 1936, in eleven beginning classes in various parts of the city. Dr. Johnson has been keenly interested in the experiment, and has provided ample assistance for the supervision of this year's work. The experience acquired in the 1935-36 experiment made it also possible at the opening of the present year to give the teachers more detailed techniques than was possible the previous year. Superintendent Johnson has now planned five geographically spaced development centers in non-oral reading for the semester opening February 1, 1937, as a part of his city-wide drive for improved reading in the schools. These centers will make it possible for teachers and principals to see the work, and meet with the writer, or a representative, for the discussion of problems connected with this method of teaching beginning reading. It is as yet too early to assemble the results from the present year's larger experiment, which appears to be going on very satisfactorily, but tests are being made and data are being accumulated for an adequate appraisal of the year's work.

AVOIDING THE SYSTEMATIC ERROR IN COMPUTING CENTRAL TENDENCIES FROM TABULATED DATA

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IN computing central tendencies, particularly means and medians, the practice of assuming untrue limits for the class intervals results in the accumulation of errors, which persist to the final results of a computation. Such an error in a final result is called a systematic error. The systematic error will be avoided only if errors resulting from false assumptions tend to average zero—if each positive error has a negative companion.

It is possible that the same false assumptions may produce a systematic error in one type of computation and fail to produce it in another. For example, in tabulated data the fact that the true centers of gravity of the measures within the various intervals tend to be slightly below the midpoints of intervals lying above the mean and slightly above the midpoints of those lying below the mean does not introduce a systematic error into the computation of a mean. This fact, however, does introduce a systematic error into the computation of a standard deviation, which error may be compensated for by the use of Sheppard's Correction.

It therefore becomes necessary to consider assumptions in the light of their effect on the type of computation being made. If the assumptions produce a systematic error either they should not be made or they should be compensated for.

The following example will clarify the point under discussion:

The figures below are the scores in arithmetic reasoning made by a class of thirteen pupils in a timed test. The score for each pupil represents the number of his correct answers.

27, 20, 24, 12, 22, 29, 19, 33, 21, 15, 25, 31, 23.

Now it is desired to find the mean of these scores.

Table I below shows the classification of these scores in intervals of five units. The table also shows a computation of the mean.

It should be noted that the class interval used was 30-34 and not 30-34.99. The only purpose which a class interval can serve is to define the measures to be included within it. In this case, therefore, no reason exists for the use of fractions.

A check on the accuracy of the solution above may be made by determining the common average of the thirteen scores. Their total is 301 which divided by thirteen equals 23.154.

TABLE I

Scale of Scores	f	d	fd
30–34	2	+2	4
25–29	3	+1	3
20–24	5	0	
15–19	2	−1	−2
10–14	1	−2	−2
	13		+3

$$\text{Correction} = \frac{\text{Assumed mean} = 22.000}{13} \quad \frac{+3 \times 5 \text{ or } +1.154}{\text{Mean} = 23.154}$$

In all treatment of tabulated data the assumption must be made that the measures within an interval are distributed symmetrically throughout the interval. (In the example scores were chosen to make the assumption true.) The assumed mean, therefore, must be taken at the physical point of balance as determined by the law of moments. When equal weights are placed at points 20, 21, 22, 23, and 24 on a lever the fulcrum will rest at 22 and not at 22.5 as is so commonly stated in elementary textbooks on statistics.

Some may argue that the treatment of the scores in intervals as 20-24.99 with 22.5 the midpoint or assumed mean is justified by the circumstance that each child did more on the test than his integral score indicates. These fractional excesses would range from a mere beginning on an extra problem to a point barely short of completing an extra problem. Perhaps the most important value of a central tendency is its service as a basic point of comparison for the individual measures within the distribution. Therefore those who contend that 22.5 should be regarded the midpoint of the interval would be compelled for the sake of consistency to regard each of the above scores one half point higher when comparing it with the mean computed by their method. They seldom do this however, choosing rather to use one definition of a score on the one occasion and a different definition on the other occasion.

The writer has long held the view that an outright compromise with truth for supposed pedagogical convenience cannot be justified. Few classroom situations afford better examples of such unwarranted compromises than the common practice of interpreting the class interval in tabulated data. The guilt for misinterpreting the class interval rests largely with some of the writers of textbooks in the fields of elementary statistics and of tests and measurements. Advanced textbooks on these subjects are more or less free of criticism but many teachers follow the elementary textbook closely, remaining confused themselves and confusing their students.

However, the writer wishes it to be understood that he is not charging such authors with being ignorant of the systematic error. He believes it is more likely that they have been misguided into the belief that a truthful presentation of the ideas would involve pedagogical difficulties. If that be the case, the writer cannot agree, for intelligent students who think beyond mechanical processes constantly raise questions about the failure of some textbooks to take into account the nature of the measures tabulated before applying a statistical procedure. Why should the student of elementary statistics be fettered with improper practices which he must surrender, often painfully, when he begins research or the study of more advanced statistics?

It is the writer's belief that many textbooks for and many teachers of classes in elementary statistics lead the students into a blind alley in the treatment of continuous and discrete data. The usual method is to introduce two "distinctly different kinds of measures" with examples of each. Data in fractions are offered as examples of continuous series, but to the intelligent student this is not satisfying for he wishes to know if the fractions do not constitute "breaks" as well as the integers. Data in terms of dollars are changed magically from discrete to continuous by refining the data to include dollars and cents. Such ideas are purely manufactured ghosts, and ghosts invariably return to haunt their creators.

Why not avoid this dilemma by facing the truth from the start—viz., that the trait under consideration may be continuous but measurements of it are discrete? The smallness to which to reduce the units of discontinuity is merely a matter of choice or convenience. The scale should always be treated as continuous, but the determination of the limits of intervals and the location of their centers of gravity must be outcomes of proper consideration of the nature of the data and the method of their observation.

If, for example, heights have been observed by measurement in terms of half inches, all within a quarter inch above or below being put in the same class, there can be no questions about the center of gravity of each interval.

Here the mean computed from an assumed mean of 52.5 will be a correct reference point for the exact height of any of the fifteen individuals. If, on the other hand, heights have been observed by measurements in terms of half inches, all within a half inch above being put in the same class, the assumed mean of the foregoing distribution becomes 52.75 inches.

TABLE II

Scale of Heights	f
54	1
53.5	2
53	2
52.5	4
52	3
51.5	2
51	1
	15

TABLE III

SPELLING SCORES

(Each score is a whole number: 12, 17, 26, etc.)

Scores	f
25–29	3
20–24	5
15–19	8
10–14	6
5–9	4
	26

Note: Midpoint of interval 15-19 is 17, the point on the scale to be taken for the assumed mean in computing the mean. Division point between intervals 10–14 and 15–19 is 14.5, the point reached after having ascended the scale through the two lower intervals in computing a median. Additional distance ascended must be added to this point.

TABLE IV

GENERAL ACHIEVEMENT SCORES

(Each score being the average of a battery of ten tests is in one decimal: 74.9, 68.0, 57.3 etc.)

Scores	f
75–79.9	4
70–74.9	6
65–69.9	8
60–64.9	5
55–59.9	3
	26

Note: Midpoint of interval 65–69.9 is 67.45, the point on the scale to be taken for the assumed mean in computing the mean.

Division point between intervals 60–64.9 and 65–69.9 is 64.95, the point reached after having ascended the scale through the two lower intervals in computing a median. Additional distance ascended must be added to this point.

Two typical examples are given below to further illustrate what the writer believes to be correct practice.

SUMMARY

Diverse methods of interpreting intervals in the computation of central tendencies have led to much confusion. To start students of elementary statistics from a sound base of understanding the writer proposes observation of the following rules:

1. Such traits as growth, time, achievement, and so on, should be regarded as continuous, which in fact they are, but the measurements (other than graphic) of such traits must of necessity be discontinuous.

2. The figures defining an interval should indicate merely the lowest and highest measures included within the interval or should indicate the midpoint of the interval.

3. Textbooks and teachers should accompany each problem with a clear statement of the nature of the data and the manner of their observation.

4. The physical law of moments should be used to determine the center of gravity (midpoint) of an interval (assuming symmetry of distribution). Half the sum of the two figures used to define the interval will be the midpoint. (Provided, of course, item 2 above has been observed.)

5. In computing medians or other percentile points on a scale the point of division between two intervals should be determined by locating the half-way point between the highest measure possible in the lower interval and the lowest measure possible in the higher interval.

A GUIDE TO RESEARCH IN SCHOOL LAW*

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LEGAL research constitutes one of the important fields of educational research. Public schools and school districts are in the last analysis creatures of the law. Their administrative structure, functions, and authority are dependent on laws and legal decisions. With forty-eight states each developing its own legal system, in addition to the Federal government, a wide variety of educational practices has developed during the last century and a half. Examination of the historical development of school law in the United States and comparative studies of the legal provisions in the different states, as well as regional differences throughout the nation, offers a rich field for the educational research worker. A comparison of the legal structure of school districts with the social structure of the communities these districts now serve, is much needed. While rural communities have enlarged and consolidated in other respects, school districts have usually remained the same.

Such research is needed to provide a body of knowledge for the guidance of those charged with the responsibility of making new laws and modifying old ones. Legislatures cannot afford to pass laws fortuitously when careful research can reveal to them the experience of the forty-seven other states along similar lines.

TYPES OF SCHOOL LAW

There are three general types of school law, each with its particular function. (1) Constitutional law provides the basis and the limitations under which other laws can operate. (2) Statutory law, passed by legislative bodies, formulates and puts into effect the will of the people. And (3) Case law interprets and clarifies the statutory law as well as determines its relationship to the constitution. Educational research in constitutional law is relatively simple. Constitutional provisions with regard to education in the various states are brief and usually of a very general nature. Research in statutory and case law is much more complex and difficult. This article is designed to guide the research worker in these fields.

The work of the legal research worker in education differs from that

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of the lawyer. The lawyer is concerned with the exact interpretation of a single situation, while the research worker is interested in comparisons and contrasts, as well as the development of trends and principles. He must also be able to discover the central meaning of a statute or decision without becoming involved in the minute shades of distinctions made.

TEXT-BOOKS

The student will do well to examine the following secondary materials on school law. Trusler[1] discusses the general principles of law with regard to many problems such as, discipline, teachers' contracts, etc., and gives definite references to the cases upon which each principle is based. He deals primarily with the educational program itself, and gives little attention to problems of the administrative structure of districts. A more recent and more complete volume by Edwards[2] places greater emphasis on the legal phases of school administration. The various aspects of school district liability and non-liability to damages are treated by Weltzin.[3] The review of literature dealing with the legal problems of educational administration, prepared by the Committee on the Legal Basis of Education presents the general principles of constitutional or common law together with an excellent bibliography.[4] These books will suffice for the casual student.

Exhaustive search for statutes and court decisions, however, necessitates the use of guides and rules on how to find the proper authorities. The legal investigator constantly refers to Cooley's *Brief Making and the Use of Law Books*,[5] and Hicks' *Materials and Methods of Legal Research*[6] for sources which may have been overlooked. The worker in educational research, however, will find an excellent compilation of legal sources in Edwards' "Where and How to Find the Law Relating to

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[1] Trusler, Harry R. *Essentials of School Law.* Milwaukee, Wisconsin: Bruce Publishing Co., 1927.

[2] Edwards, Newton. *The Courts and the Public Schools.* Chicago, Illinois: University of Chicago Press, 1933.

[3] Weltzin, J. F. *Legal Authority of the American Public School.* Grand Forks, North Dakota: Mid-West Book Concern, 1931.

[4] "The Legal Basis of Education," *Review of Educational Research,* III (December, 1933), pp. 369-468.

[5] Cooley, R. W. *Brief Making and the Use of Law Books.* St. Paul, Minnesota: West Publishing Co., Chap. XXIX, 1926. Summary chapter is especially recommended.

[6] Hicks, F. C. *Materials and Methods of Legal Research.* New York: Lawyers Co-operative Publishing Co., 1933.

Public-School Administration."[7] His later work, "Methods and Materials of Legal Research,"[8] is a concise and helpful guide, but too technical for the student who is not familiar with the elements of legal research.

The research worker interested in a particular legal aspect of education should first examine the statutory law on the subject. It is advisable to study the statutes of the forty-eight states in order to gain a clear concept of the whole problem. However, where this is impossible, due to time and money limitations, the selection of states should be made carefully. For example, the importance of the town in New England, the county in the south, and the local district in the middle west, affect the legal structure of the school district within each section. States should therefore be chosen from each of these groups if the type of district organization affects the problem to be investigated.

HOW TO FIND A STATUTE

Recent statutory laws, including the enactments of the state or federal legislatures, are easily obtained in law libraries, or by writing to the respective Secretary of State. Fully annotated copies of state constitutions are usually, though not always, found in the latest collections of the statutes of the different states. Texts of state constitutions and amendments adopted prior to 1917 are: Kettleborough's *The State Constitutions*[9] and Thorpe's *The Federal and State Constitutions.*[10]

STATE LAWS

There are many collections and republications of general state laws. The most common are consolidated or compiled laws and codes.

Consolidated, compiled, or revised laws (the terms are used interchangeably) are a compilation of the statutes in force, rewritten and reenacted so as to combine all previous laws in force to date. For example,

[7] Edwards, Newton. "Where and How to Find the Law Relating to Public-School Administration," *Elementary School Journal*, XXVII (September, 1926), pp. 14-24.

[8] Edwards, Newton. "Methods and Materials of Legal Research," *Review of Educational Research*, IV (February, 1934), pp. 85-91.

[9] Kettleborough, Charles, editor. *The State Constitutions and the Federal Constitution and Organic Laws of the Territories and Other Colonial Dependencies of the U. S. of America* (Indianapolis, Indiana: B. F. Bowen & Co., 1918), 1645 pp.

[10] Thorpe, Francis Newton. *The Federal and State Constitution, Colonial Charters and Other Organic Laws of the States, Territories and Colonies Now or Heretofore Forming the U. S. of America* (Washington: Government Printing Office, 1909), 7 volumes.

the *Revised Statutes of Utah*, 1933, are a revision of all laws of the state up to, but not including, the laws of 1933. Some states popularly call this type of compilation a "code." *The Code of Alabama*, 1923 (official edition), for example, is the compilation of acts of the Legislature up to 1923, which are arranged, divided into sections, numbered, and classified. All the laws on one particular subject are also known as a "code." There are separate codes on school law, compiled by the State Superintendent of Public Instruction in most states. However, no school code is complete unless due consideration is given to the ordinances (where they exist) as passed by the state board of education or any other authorized body. These ordinances are flexible provisions which enlarge upon the general statute and may effect the state as a whole or separate localities.

FEDERAL LAWS

Federal laws dealing with education may be found in the following volumes:

(1) *Statutes at Large.*—At the close of each Congress, all the laws that have been passed during the entire term, the treaties, resolutions, and proclamations are compiled and published in book form by the federal government. In recent years the Statutes at Large have been published in two volumes—one containing the general laws, and the other the laws of a private nature—treaties, executive proclamations and joint resolutions referring to individuals. The last mentioned type of law is of no interest to the student of education.

(2) *Compiled Statutes of the United States.*—In 1901, the confusion and disorder of the *Revised Statutes* (1873-1901) was remedied by the publication under private enterprise of a new three-volume compilation known as the *Compiled Statutes of the United States* of 1901, covering all the United States Acts of Congress of a general nature from 1789 to 1901. Later editions together with pamphlet supplements of cumulated indexes, keep the laws up-to-date.

(3) *Federal Statutes Annotated (1906).*—The various acts of Congress are arranged alphabetically according to their subject matter. There are elaborate notes attached to the various sections. The new editions and supplements provide the later statutes.

HOW TO USE THE STATUTES

The difficulties encountered in the use of statute books, whether State or Federal, will be lessened, time will be saved, and accuracy promoted,

if the user passes from the most comprehensive to the less comprehensive and from the general to the particular regarding the subject matter. The sequence should be as follows:

(1) The latest collection of statutes, with its supplementary volumes.
(2) The subsequent session laws.
(3) Slip laws (copies of new acts in leaflet form issued as soon as passed) subsequent to the last volume of session laws. These are easily obtained by writing to the Senator (State or Federal) interested in the law or subject.

The statutes are approached either by way of the Index or Table of Contents, to be found in the compilation. Education material would be found in the Index under "education," "schools," "school books," "districts," and similar topics.

HOW TO FIND A CASE

If there is a statute, cases interpreting it should be found in order to gain the correct version of the law and fully understand its meaning. When a case has been decided upon its merits, by the highest court, the decision not only determines the rights of the parties to the action, but it also sets up the principles involved, as permanent rules of law. These rules are applicable in all future cases in the same area, embracing similar facts and involving the same or analogous principles, unless they have been overruled by a later decision.

This search for cases may begin in a digest, an encyclopedia, a textbook, or an annotated case series.

Digests.—The chief purpose of a digest is to make the contents of the law cases accessible in brief digested form. A digest is essentially an index to cases, but it is much more than an ordinary index, for it indicates the findings and frequently, the facts of each case. Each digest paragraph summarizes a single point in a single case, and is similar in character to a headnote or syllabus paragraph. It is prepared from an analysis of the reported case.

What is a good digest, and how is it used? The student should use the *American Digest System* which brings all reported American cases into one series of digests, under a uniform classification. This system includes:

(1) *Century Digest*—from earliest American law to 1896.
(2) *First Decennial Digest*—cases from 1897-1906.

(3) *Second Decennial Digest*—cases from 1906-1916.

(4) *Third Decennial Digest*—cases from 1916-1926.

(5) *Current Digest*—all current decisions.

(6) *Monthly Advance Sheet*—supplying a monthly digest of all currently reported cases.

The above list appears rather formidable. However, the student interested in present educational law will make most use of numbers 4, 5, and 6. The chief value of the others will be in studying the historical development of school laws.

Let us begin with the *Third Decennial Digest*. The volumes are arranged alphabetically, and we find the topic "Schools and School Districts" in volume 24, which includes topics arranged alphabetically from Sales to Specific Performance. Turning to the section "Schools," there is a scope-note giving the scope of the subject and an outlined analysis of the subjects treated. Each topic contains sub-headings which are numbered and are preceded by a small symbol or key. This number or Key-Number system is uniform throughout the entire digest.

Thus, "Consolidation of School Districts," bears the key-number 33. For earlier or later cases, one need only look for the section dealing with "Schools and School Districts," key-number 33, which refers to the consolidation of school districts. Having found key-number 33, we discover a list of cross references to other subjects, related to consolidation, with their respective key-numbers noted. For instance, one reference reads: "Mandamus to compel superintendent to declare consolidation, see Mandamus, key-number 415, 79, 152 (2)." The research worker interested in the above would look in the volume "M" containing "Mandamus" and the indicated key-number will lead to cases dealing with another phase of consolidation—the use of a mandamus to compel the superintendent to act on this question.

Following the list of cross-references under consolidation, we find short paragraphs reading like this one: "(United States Sup. Mississippi, 1928) Consolidation of school districts is discretionary with county school board.—(1925) Rice v. Gong Lum, 104 So. 105, 139 Miss. 760, judgment affirmed Gong Lum v. Rice, 48 S. Ct. 91, 275 U. S. 78, 72 L. Ed.—" What are these abbreviations and what do they mean? They are the citations or listings of a case. United States Sup. Mississippi, 1928, means that the case finally reached the United States Supreme Court in Mississippi in 1928. The statement followed by the date 1925, means that this was the principle of law enunciated in the case of Rice v. Gong Lum.

The original case may be located in volume 104 Southern Reporter, page 105, or volume 139 of the Mississippi Court Reports, on page 760. The judgment of the original case was then affirmed in the appeal of the case to the Supreme Court of the United States. This later decision may be found in volume 48 of the Supreme Court Reporter, on page 91, or volume 275 of the United States Reports, page 78, or volume 72 of the Lawyers' Edition.

This case reached the Supreme Court of the United States on constitutional grounds. The principal question involved, was whether a Chinese child, born in this country and a citizen of the United States, was deprived of equal protection of the law, if she were prohibited from attending a consolidated school which received white children only. This was the main issue in the case, but the court also upheld the Mississippi State Court decision that "Consolidation is entirely discretionary with the county school board."

There are a series of such cases listed under key-number 33 in the *Third Decennial Digest*. For other cases dealing with consolidation of school districts, one need only look for the earlier or later editions under "School Districts," key-number 33.

If the subject in question is not found under "Schools and School Districts," the use of the *Descriptive-Word Index* to the *First* and *Second Decennial Digests*, may prove helpful. It is a compilation of thousands of catchwords with references indicating the topic and key-number of digests in the *Decennials* of cases involving these words.

The procedure thus far shows how to secure a list of cases pertinent to the subject of interest. How is the original case actually found? The case, Rice v. Gong Lum, was first listed as 104 So. 105. As previously explained, this refers to volume 104 of the Southern Reporter, page 105. The *Southern Reporter* is part of the *National Reporter System*, first published in 1879. This system combines into one publication, the current State Supreme Court decisions of each of the forty-eight states, as well as the Federal Supreme Court. The states are grouped geographically as follows:

(1) *Atlantic Reporter*—reports in full every Supreme Court decision of Connecticut, Delaware, Maine, Maryland, New Hampshire, New Jersey, Pennsylvania, Rhode Island, and Vermont, since 1885. New volumes are added annually. Citations to the Atlantic Reports read: 49 A. 105, i.e., volume 49 of the Atlantic Reporter, page 105.

(2) *Northeastern Reporter*—decisions in Illinois, Indiana, Massachu-

setts, New York, and Ohio, since 1885. Abbreviated as N.E. in the citation of a case.

(3) *Northwestern Reporter*—decisions in Iowa, Michigan, Minnesota, Nebraska, North Dakota, South Dakota, Wisconsin, since 1879. Abbreviated as *N.W.*

(4) *Pacific and Pacific (2d) Reporters*—decisions in Arizona, California, Colorado, Idaho, Kansas, Montana, Nevada, New Mexico, Oklahoma, Oregon, Utah, Washington, and Wyoming, since 1883. Abbreviated as *P. or P. (2d).*

(5) *Southern Reporter*—decisions in Alabama, Florida, Louisiana, and Mississippi, since 1887. Abbreviated as *S.*

(6) *Southwestern and Southwestern (2d) Reporters*—decisions of Arkansas, Kentucky, Missouri, Tennessee, Texas, and Indiana Territory, since 1886. Abbreviated as *S.W.*

(7) *New York Supplement*—contains every New York case (both lower and upper courts) since 1888. Abbreviated as *N.Y.*

(8) *Supreme Court Reporter*—a complete continuation of the United States Supreme Court Reports (official), beginning with volume 106 of the United States Reports (106 U. S.). Each book covers an entire term of the Supreme Court. Abbreviated as S. Ct.

(9) *Federal Reporter*—decisions of the United States Circuit and District Courts, since 1880. Contains the United States Circuit Courts of Appeal from the beginning, the District of Columbia, and the Commerce Court.

Each of the cases reported in the *National Reporter System* are copies of the official State Court Reports, and equally authoritative in the Courts. In the case we are following, the citations 104 So. 105, and 129 Miss. 760, both refer to the same case; the former is found in the National Reporter System, the latter in the official state court report.

By using the *National Reporter System,* each syllabus paragraph is marked with the topic and key-number under which the point will also appear in the *American Digest System* already described. Volume 104 of the Southern Reporter, page 105, reports the case of Rice v. Gong Lum (Supreme Court of Mississippi, May 11, 1925) with syllabus paragraphs outlining the case, including the decision in full. One paragraph, for example, reads as follows: "Schools and school districts, key-number 33, 42 (2)—'Consolidated school' defined; Consolidation of school districts is discretionary with the school authorities . . .". The key-number thus mentioned leads from that case to the exact place in the *Digest* where

there are other cases on the same point. The *American Digest System* and the *National Reporter System* use the same key-number annotation.

By the same method, the Supreme Court decision may be found. Volume 48 of the Supreme Court Reporter, page 91, contains the case Gong Lum v. Rice. The names are reversed, due to the fact that Gong Lum appealed the case to the Supreme Court of the United States on constitutional grounds. He is thus the appellant and his name appears first. Above the title of the case are found these figures, (275 U. S. 78). That is, the official report of this case may be found in the United States Reports, volume 275, on page 78. In this Reporter, also, there are summarizing paragraphs with key-number references, and the entire decision as rendered by the court.

WHAT ARE THE PERTINENT FACTS OF A CASE?

The essential facts of a case which should be abstracted by the investigator, preferably on 5 x 8 cards, include:

(1) Subject matter.
(2) Parties concerned.
(3) Cause of the action.
(4) Ground of defense.
(5) Object of the action.
(6) Point in controversy.

USE OF ENCYCLOPEDIAS

An encyclopedia of law may be used to re-check the information gained from the other sources and to secure further cross-references. It is also helpful in rendering a broad concept of the law regarding any subject.

An encyclopedia of law is a collection of comprehensive articles which covers (1) the entire body of the law as in *Corpus Juris,* and (2) all the subjects of the law developed in part by authorities, as in *Ruling Case Law.* It supplies in the form of texts and notes, the whole body of law, together with a list of cases affecting it. Thus, volume 56 of *Corpus Juris* treats "Schools and School Districts." An outlined analysis, preceding the text, is used as an index. In Part III, sub-heading E, of this outline, reference is made to "consolidated districts" to be found on page 261. Referring to page 261, we find that it contains such general statements of established legal doctrine as "In the absence of statute authorizing it, no consolidated district can be created nor any consolidation affected." A footnote follows this, citing cases which declare this principle. At this point, it is a simple matter to find these cases in the *National Reporter System.* Any other subject under school law may be

found by using the topical analysis, which precedes the material on schools. The most recent information is gathered in the supplementary volume for 1935. In *Ruling Case Law* (R. C. L.), the subjects are also arranged alphabetically, and may be used in the same manner. However, the educational research worker will find more detailed and specific information regarding schools in *Corpus Juris.*

USE OF ANNOTATED CASE SERIES

An annotated case series shows the present state of the case law on the question and points out whether the decision agrees or disagrees with the older principle of law. It furnishes the reported decision of the case and the substance of what has been decided on the same point in other states.

Just what is meant by the words "annotation" or "note" is sometimes not very definite. The term may be used for extensive annotations which analyze, review, or distinguish the various authorities and reconcile seeming conflicts among them. On the other hand, the same word may designate only a bare reference to a single case, noted on the margin of the page, and almost everything intermediate between these extremes.

In the *Lawyers' Reports Annotated* (L.R.A., 1880—) and the *American Law* Reports (A.L.R.), the annotations are in the form of text and footnotes appended to the original opinion of the Court.

The L.R.A. annotations are approached via the *Index* volume of the series. Thus, under the topic "Schools," one finds subdivision V dealing with districts. Subsection 28 considers boundaries — " 'The effect of changing boundaries of school districts on rights in real property.' 26 L.R.A. (N.S.) 486." Turning to volume 26 of the *Lawyers' Reports Annotated* (New Series), we find on page 486, the case of the Pass School District of Los Angeles County v. Hollywood City School District of Los Angeles County, which was tried in the California Supreme Court. The opinion of the court is given in full. In the footnotes appear the rules of law and citation of cases. The cases cited may be used in further research. The notes, however, are not official productions like judicial opinions and the conclusions reached are entitled only to such weight and influences as are ordinarily given to legal texts.

Besides these annotators, there are:

(1) *Rose's Notes on United States Reports* — every case decided by the United States Supreme Court is critically analyzed and every legal proposition annotated separately. The cases are arranged chronologically and are brought down to date.

(2) *L.R.A. Extra Annotations* — traces the judicial history through their citations in other cases, of the cases that are reported in volumes 1-70, L.R.A., showing whether they have been approved, disapproved, limited, or distinguished. This set is of much the same character as a citator, but with the text and statement of the case included.

CITATORS AND CITATION BOOKS

These volumes give the investigator the volume and page references to the later cases which have cited the principal case of interest as a precedent.

Having a definite case in mind, the investigator may be interested in knowing whether it has been followed or overruled in later cases in that state or any other state. Thus, Howe v. Board of Education of Landis Township School District, 60 A. 518, 72 N. J. Law, 158, may be traced in *Shepard's Atlantic Reporter Citations,* in order to verify the reliability of the case. It is a volume replete with figures. Searching under the New Jersey section, we use the *National Reporter Citations,* 60 A. 518, and find under 60, 518, this citation: 119 At. ²876. This indicates that the same principle of law brought out in Howe v. Board of Education, is also stated and cited in paragraph 2, of 119 At. 876. Turning to volume 119 of the *Atlantic Reporter,* page 876, paragraph 2, reveals that the provisions of the Civil Service Law apply to school law and that the Howe case is used as a precedent in a later case.

Shepard's Citations (illustrated above) consists of a series of over seventy separate publications, covering practically every state and territory in the United States. This service includes a page by page examination of every decided case and all recent acts of the State Legislatures. It estimates the value of a case as authority by employing a system of abbreviations to indicate whether the citing case explains, follows, limits, distinguishes, or overrules the principal case. These abbreviations are fully explained in the foreword of the volumes.

FINDING THE LATEST CASE

The notes in an encyclopedia, textbook, or annotated case series, must be supplemented by use of other books if one is to find the cases decided since the notes were compiled. Publishers of encyclopedias issue from time to time, volumes giving the citations of later decisions. The same service is performed for the annotations in the *American Law Reports, Annotated* (A.L.R.), by the Table of Supplemental Decisions in the appendix of each cloth bound volume of its Digest.

An alternative method is to take some one or more of the cases in point, found in the encyclopedia or annotation, and locate it in the *American Digest System* by means of the "Table of Cases Digested" in order to find the key-number. With the key-number it is possible to find the cases reported since the latest issue of the *Monthly Digest* by searching in the *Reporter Advance Sheets*. The latter are in pamphlet form.

VERIFYING AND EVALUATING CASES FOUND

When the investigator has completed his search for cases, every case which he has found should be verified, if possible, by actual reference to the original report of the case, in order to make certain that it is really in point.

Each decision should also be looked up in a citation book, in order to find how it has been regarded by the courts since it was decided.

FINDING THE FACTS OF A CITED CASE

When the investigator does not have access to a case for which he has a citation, and is therefore unable to verify his citation by examining the decision itself, he may ascertain the facts and the points decided through use of the *American Digest System*. He will, by reference to the "Tables of Reports Digested," find the title of his case, and follow the key-numbers under which the different points decided have been digested. The various digest paragraphs to which he will thus be referred will, considered, prove to be a synopsis of the facts and law of the case.

GUIDES TO CASE LAW

The following volumes are essential in order to locate judicial decisions on school law:

(1) *American Digest System*, 1685 to date.
Contains a digest of decisions of the American courts of last resort.
New York: West Publishing Co.

(2) *Bouvier's Law Dictionary* — Library Edition, 1928.
Contains a complete dictionary of legal terms, words and phrases, a glossary of Latin and French maxims and also a condensed encyclopedia of law.
New York: Banks Law Publishing Co., 1928.

(3) *Corpus Juris,* Volume 56.
Encyclopedia of law containing the entire body of the law, together with citation of cases listed in the footnotes.
New York: American Law Book Co., 1932.

(4) *National Reporter System.*
It is a part of the *American Digest System,* and uses the same key-numbers. The Supreme Court decisions of each of the forty-eight states are grouped geographically in volumes as follows:
(a) Atlantic Reporter — Abbreviated as 49 A. 105 — *A.*
(b) Northeastern Reporter — Abbreviated as *N. E.*
(c) Northwestern Reporter — Abbreviated as *N. W.*
(d) Pacific Reporter — Abbreviated as *P.*
(e) Southern Reporter — Abbreviated as *So.*
(f) Southwestern Reporter — Abbreviated as *S. W.*
(g) New York Supplement — Abbreviated as *N. Y.*
(h) Supreme Court Reporter — Abbreviated as *S. Ct.*

(5) *Shephard's Citations.*
Separate volumes for the courts of each state. Issued at frequent intervals. It indicates when and where a case has been cited by other courts and enables one to trace the history of a case, and to evaluate it up to the present date.

These volumes form the backbone of a law library. They may be found in libraries attached to law schools and universities. Where these are not available, the county court houses are usually liberal in permitting the use of their law volumes for educational purposes.

EDITORIALS

A LAYMAN'S POINT OF VIEW

In the February issue of *Harper's Magazine* there appears an editorial which presents what may be regarded as a layman's point of view on the scope of education in a democracy. The issue discussed concerns the amount of education to which an individual is entitled. The editorial points out the present tendency to make the schools responsible for needs which "other social mechanisms have thus far been unable to serve" and that the schools "have become agencies of public health departments, of police departments, and of juvenile courts." It is pointed out that it is doubtful "if the school can best and most economically perform these services." There has developed the notion not only that a child is entitled to be maintained in school while he is of school age, but also must be automatically advanced," whether or not "he is capable of learning from it." The result is that standards are lowered, costs are increased, and "an enormous sum is wasted."

The editorial suggests that "the generality of our people cannot be educated beyond the fifth grade." If this is the level, "then universal education must stop there." It is suggested that "we must permit to go farther only those who prove their fitness and we must require additional proof at each step" and that the care of handicapped children of all kinds should be turned over to other agencies than the school, better equipped to deal with them.

Several important issues are raised. One deals with what may be termed the content of the curriculum. It appears clear that the writer of this editorial conceives of the curriculum as a body of subject matter to be learned, arranged in layers or levels of increasing difficulty. The extent of education of any individual would be determined by the level of difficulty of the subject matter he could master. Under the plan proposed there would be a heavy piling up of children in the lower grades due to their inability to pass the uniform hurdles that would be set up for all children. Children would either repeat the work of a grade again and again, or they would have to be dropped from the school.

a possibility not to be considered in the light of our legal provisions requiring children to remain in school until the ages of 15 or 16.

It seems obvious that a much wiser solution of the issue raised would be to develop a program of education that would be increasingly discriminating at all levels and adapted to the abilities and needs of the pupils, a possibility apparently not contemplated by the writer of the editorial. Theoretically this approach is wholly feasible and sensible. In practice one finds little evidence that the program is effectively applied, although many cities are at work on the problem. It seems clear that such a program would require a radical reorganization of the nature of the high school curriculum. The reorganization would have to be along functional lines, that is, the aim would be to so organize a program as to meet the needs of the group rather than to meet requirements for entrance to college, a future career engaged in by relatively few of the high school population in some of our states. Obviously a differentiated program adapted to the needs of 16 year old children of different mental levels would be quite different from the present academic program offered in most small high schools.

There is no question that the issue raised concerning the care of handicapped individuals is an important one. The chief question to be considered is whether the school should be held responsible for this work, or whether the school in coöperation with other social agencies would not develop a coöperative attack on the problem. This is the heart of a recent proposal by Dr. Campbell, superintendent of schools of New York City, who suggested the formation of a Ministry of Children, consisting of representatives of all community agencies concerned with the care and development of the individual. The responsibility of this Ministry would be the consideration of the essentials of a well rounded community educational program, dealing with all sides of the problem of improving the environment in which the children of this generation are growing up. It would take steps to integrate the attack on the conditions revealed. Obviously the school alone cannot overcome all of the conditions in the environment that interfere with the growth of the individual. The schools may well assume the leadership in this coöperative community enterprise.

LEO J. BRUECKNER

AN OPEN LETTER
From the Superintendent of the Public Schools of "Middletown" to His Supervisors, Principals, and Teachers

(At the close of the afternoon session of the New Orleans meeting of the National Society for the Study of Education, Dr. C. L. Cushman, Director of Research and Curriculum of the Public Schools of Denver, Colorado, was scheduled to speak on the subject of "The Practical Contributions of Part I of the Thirty-Sixth Yearbook to School Officers and Teachers." When the presiding officer presented him, Doctor Cushman said,

"Mr. Chairman:

"As my contribution to this program I have chosen to assume in imagination that I am director of instruction in Middletown—for our purposes a city of 100,000 persons. As director of instruction I have addressed a communication to the principals, supervisors, and teachers of all of the public schools of that city. I shall read this communication. From it, you may ascertain what I think the Yearbook on Reading should contribute to school practice, and how that contribution might be encouraged by school officials." Continuing, he said:)

TO THE TEACHERS, PRINCIPALS, AND SUPERVISORS OF MIDDLETOWN

I have just completed reading a book. My purpose in addressing this communication to you is not to announce that fact, but to share with you certain of the convictions which I have derived from this experience.

The book to which I refer deals with the subject of reading. Its official title is: *Thirty-Sixth Yearbook of the National Society for the Study of Education, Part I,* entitled "The Teaching of Reading: A Second Report." This Yearbook was prepared by a committee of the Society under the chairmanship of Professor William S. Gray.

I think that the publication of this book is of sufficient importance to justify our making a complete re-examination of the reading program of the schools of this city. I shall shortly indicate what seem to me to be the

most significant points of view relative to reading instruction set forth by this Yearbook. Before doing that, however, I should like to digress for a moment to insert a thought that I have relative to the persons who should study this Yearbook and re-examine our reading program.

There are, as you know, two theories relative to the place which the classroom teacher should hold in American education. According to one of these theories, the classroom teacher should hold a position in education comparable to that of the nurse in the field of medicine; that is, the teacher should accept and act upon instructions from other persons in authority. Those who hold this point of view will say that upon the publication of a yearbook such as this, those in authority should examine the book, determine what changes are demanded thereby, and dictate a program embodying those changes, the same to be followed by all teachers.

The other theory is that authority in American education should be shared among classroom teachers, principals, supervisors, superintendents, board members, and the public itself. According to this theory, a very great share of the responsibility for directing the program of the schools must rest on the shoulders of the classroom teacher, because he is the one who is at the focal point where learning is taking place. It follows, according to this theory, that all supervision and administration are for the purpose of helping the teacher to exercise this responsibility intelligently and effectively. Those who hold this point of view would say that the publication of a yearbook such as this should occasion widespread study among teachers, principals, and supervisors for the purpose of determining coöperatively the significance of the contents of that book to classroom instruction.

As I have indicated on previous occasions, I think that the second of these two points of view relative to the place of the classroom teacher is the only one which is consistent with the objectives of education in a democracy. I think, however, we still have to demonstrate that on a wide scale schools can be efficiently organized on that basis. For example, I think we still have to demonstrate that with this coöperative plan of school control we can within a reasonable period of time bring the practice of American schools in such a matter as that of reading instruction into line with the best procedures determined by careful research and reported in such publications as the present Yearbook.

In 1925 the National Society for the Study of Education published its first Yearbook on reading. That Yearbook was probably the most important publication on the teaching of reading which had been pub-

lished to that date in the English language. The extent to which that Yearbook has been utilized by teachers, principals, and supervisors as an aid for developing an improved program of reading in the American schools does not, in my opinion, speak very well for the effectiveness of coöperative and widespread sharing of responsibility in education. According to the figures of the National Society, thirty thousand copies of that Yearbook have been sold since its publication. It is, of course, impossible to estimate how many persons have made extensive use of those thirty thousand copies. If we assume that thirty-five thousand persons have studied the book with considerable care and then estimate that there are seven hundred thousand teachers and school officials in America who have some responsibility for instruction in reading, we can estimate that the book has been used by approximately one out of twenty of those persons. The American schools must do better than that with this new book and on similar occasions hereafter, if they expect the American people to accept the point of view that the direction of American education should be widely shared among teachers, principals, and supervisors.

Now for the Yearbook! From the many points developed in the Yearbook I have selected nine which seem to me to be of particular significance. Some of these points are developed fully at particular points in the Yearbook. Others are touched on in many or even in all of the chapters. In one or two instances I have singled out a point that is not fully developed in the Yearbook, because I believe the point has unusual significance. The points which I have selected are as follows:

1. We still have to demonstrate in America that reading can be made an important instrument of democracy—an instrument that will assist the people as a whole in finding solutions to their common problems and in living at higher cultural levels than they could otherwise do.

This point of view is given most attention in Professor Gray's opening chapter entitled "A Decade of Progress." (Pages 5 and 18) I wish that the point had been expanded and followed up in other chapters. I think the committee might well have added that if we have demonstrated anything thoroughly to date, it is that the development of reading ability without a corresponding development of reading discrimination contributes nothing positive to American society — indeed, such a program may be a menace to society.

2. Throughout the Yearbook there runs the idea that it should be the aim of the schools to organize their program in such a way that the

reading of all normal children of all ages and for all types of school work will be a pleasurable experience. To quote one specific reference, Professors Betzner and Lyman say, "Enlightened high school procedures today are based on the key idea that the major experience in using literature is reading it, abundantly, with enjoyment, under normal reading conditions." (Page 195)

3. Such a reading program as is referred to in the previous point cannot be achieved if we rely on textbooks alone for our reading materials. While there has been some improvement in the reading materials found in the textbooks, they still "have deficiencies that make them difficult to understand," (page 141) particularly by the children of the grades for which they are intended. A satisfactory reading program demands a wide range of reading materials carefully selected, graded, and adapted to the curriculum of the particular school concerned. Extended helpful discussions of this problem will be found in several chapters of the Yearbook.

I was particularly glad to find the recommendation in the chapter on school libraries by Professor Johnson that teachers and even pupils should assist in the selection of books for such a reading program. (Page 261)

4. "Non-promotion merely because of difficulty in reading can no longer be defended." (Page 21) Further, according to the committee, a well-developed program of reading instruction characterized by properly adapted reading materials will eliminate the need for most remedial reading classes and greatly reduce the need for remedial teaching at the higher levels. (Page 21)

5. The greatest advance in reading instruction during the next decade, according to the committee, should be in training pupils to read the materials essential for successful achievement in the study of the content subjects. (Pages 19 and 20) This advance will be possible only if every teacher of every subject in every grade including the high school and even the college makes himself a qualified teacher of reading. (Page 19)

6. Individual pupils should have a voice in determining what is for them good literature. Again, Betzner and Lyman may be quoted with profit: "Schools and libraries are challenging readers to make their own selections, to establish their own valuations of reading materials over a range that steadily widens with their expanding capacities. These are all commendable phases of the effort to relate reading to experience, and

to emphasize experiences *through* literature as well as *with* literature." (Page 200)

7. Oral reading must have a place of increased importance in the reading program. This place is not to be provided, however, through merely decreeing that some certain percentage of the total reading program shall be given to oral reading, for, in the words of Professor Vera Alice Paul, the chairman of the chapter on oral reading, "to teach oral reading as a perfunctory exercise in the program of the day is time ill spent." (Page 307) We must, rather, build our reading program in such a way that it will contribute to effective reading in all of the types of situations in which persons read both in life inside the school and in life outside the school. As we do this, we shall find that oral reading demands more emphasis than it has been given in the past decade.

8. An individualized program of reading instruction, such as is advocated throughout the Yearbook, makes increasingly important a system of school records that provide for the continuous recording of the reading done by and of the reading interests of individual pupils. While this point is stressed most emphatically in the chapter by Professor Johnson (page 273), it is also suggested by other members of the committee in other chapters.

9. In the lives of modern youth there are many types of activity that detract from pupils' desire and even need to read — particularly to read the types of material to which the schools have been accustomed to give approval. Again from Betzner and Lyman, "The day is passed when, perforce, youths stayed at home and read books in their leisure time because they had nothing else to do. The contrast today is obvious. With the rapid expansion of transportation facilities, 'going to see,' 'going to hear,' 'attempting to handle,' are part of the normal life even of elementary-school pupils, and certainly of older youths. To their direct observation is exposed the construction of bridges, roads, dams, buildings, boats, airships. To them city, country-side, woods, shores, and mountains are easily accessible. Toy-makers reproduce on a small scale many of the tools of modern life. The modern museum gives children opportunities both to observe and to manipulate models of machines, instruments, and other products of past and present civilizations. To all such sources of first-hand experience young people readily respond. No one can deny the educative values that lie in multiplied first-hand experiences. For those interested primarily in the development of traditional culture, however, they present a new challenge. The world is so full of possible first-

hand experience that young people need wise guidance, a portion of which can be given by reading. For most youths reading is no longer something apart from life, but intimately associated with it." (Page 192)

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The American public school from its earliest beginnings has been primarily a reading school. While the modern school recognizes and utilizes many sources of information other than reading, it remains and will continue to remain a fact that no child can succeed in the American public school unless he learns to read effectively. It follows, therefore, that the publication of a volume that offers effective aid in improving the reading program marks an important event in American education.

Accurate information relative to the effectiveness of various techniques of reading instruction has been increased tremendously during recent years. According to the committee, "the number of studies published since 1925 exceeds twelve hundred, which is more than twice the number reported in the preceding century." (Page 15) It is no small service which this committee has rendered to the school teachers of America in making available to them in a single volume the outline of a reading program that is in accord with this vast amount of research.

The development of an efficient reading program, even with the assistance of this Yearbook, is not an easy task. The answers for all of the questions which we may ask relative to reading instruction are by no means known. As is pointed out in the Yearbook, there is plenty of room for any teacher or principal to make further contributions to our knowledge relative to learning to read. Neither are all of the known facts relative to effective reading techniques reported within this one volume. I am convinced, however, that the volume does offer more concrete assistance for the development of a reading program than does any other single publication. Further, the references to related materials which are provided throughout the volume are so complete that there can be no excuse for any individual to say that he does not know where to turn for added help.

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My purpose in addressing this communication to you has been to indicate that I believe the new Yearbook of the National Society can provide tremendous assistance to us in improving instruction in reading in our schools if we will but study it diligently. I fail to see how any teacher could study this volume without finding at least fifty definite suggestions for the improvement of his own instruction in reading.

It is not my intention to ask that you accept my verdict relative to the merit of this Yearbook. It is to be hoped that many individual teachers and many groups of teachers will deem it advisable to purchase copies of the book and to study it with care. In my opinion, it is worth $2.50 ($1.75 for paper-bound copy) of any person's money.

In addition to the use which individuals or small groups of teachers will make of the book, a committee of teachers, principals, and supervisors is to be appointed at an early date for the purpose of proposing changes which should be made in the reading program of our schools in keeping with the recommendations of this Yearbook.

[*In conclusion, Doctor Cushman said,*

"That, Mr. Chairman, indicates the sort of use I think school officials should make of Part I of the Thirty-Sixth Yearbook of the Society."]

REVIEWS

Address all communications relative to book reviews to Editor Kai Jensen, University of Wisconsin, Madison, Wisconsin.

SORENSON, HERBERT. *Statistics for Students of Psychology and Education* (New York: McGraw-Hill Book Company, Inc., 1936), pp. VIII + 373. $3.50.

Present-day authors of texts in the field of educational statistics are almost universally recognizing that most students of this subject are interested in the practical use and interpretation of the more common statistical procedures rather than in derivations and other mathematical backgrounds. Sorenson has attempted to meet this need and on the whole is to be commended for the success with which he has done so. The topics covered are in general those important for the purpose indicated above. The discussions and explanations are in most cases clear and are not made too difficult by unnecessary mathematics. The exercises provided are numerous and of such types as to be quite helpful in understanding and interpreting statistical procedures as well as in computation.

Among the particular portions of this volume which, in the reviewer's opinion, are unusually good, are Chapter I, on the definition and scope of statistics; the discussion in Chapter III dealing with class limits, a topic that is frequently dealt with misleadingly in the statistics texts; Chapter II on the present need for statistical training, which might well be expanded to greater length; and the discussion of the mean in Chapter IV.

There are, as is true in the case of any book under review, a number of points on which the reviewer's opinion is not so favorable. Graphs of the type presented on page 31 should usually have their lower ends on the base line, and those of the type given on pages 35 and 36 tend to encourage graphic representations by areas and volumes, which is very likely to be misleading. The mode receives much more attention than its frequency of use seems to warrant, whereas such a commonly used measure as the median deviation is not even mentioned in the book. Other omissions of topics that would seem to belong in even an elementary volume are the Ayres method of correlation, the reliability of differences of matched groups, the standard and probable errors of estimate and of measurement, and the smooth frequency curve. The suggestion that "The lowest score may be considered as the 0 percentile and the value just above the highest score is the 100 percentile," is not strictly true and is probably an undesirable approximation. A suggestion that the range of a tabulated distribution be found by assuming the highest and lowest scores at the midpoints of the highest and lowest intervals usually results in giving too small a value. The form of calculating correlation ratios is clumsy in that it requires a separate table for each ratio instead of merely one for both. The use of k' as equal to $1-k$ introduces a new symbol, and one likely to be confused with k.

Despite these and other minor points in

which the reviewer believes the volume might be improved, the book as a whole ranks among the two or three best volumes for beginning students in educational statistics that are at present available.

C. W. ODELL
University of Illinois

BETTS, EMMETT ALBERT. *The Prevention and Correction of Reading Difficulties* (New York: Row, Peterson and Co., 1936), pp. XIV + 402. $2.00.

During the past ten years a tremendous and growing interest has been manifested in the phase of education classified as reading disability. This is reflected not only in the large number of investigations reported but also in the frequent appearance of systematic treatises on the subject. The effect of this accumulation of results and interpretations has been to foster the view now generally held that most reading difficulties can be prevented and that most reading disabilities can be relieved in whole or in part. Although progress toward universal prevention of reading disability is not as rapid as some would prefer, nevertheless, material progress in the right direction is being made.

This book presents a critical summary and interpretation of research findings with a well organized program of prevention and correction. The author has drawn heavily from experience in his own reading clinics at Shaker Heights and at the Oswego State Normal School. Throughout the book there is constant and heavy emphasis upon reading readiness as the soundest preventive program. This includes physiological and mental maturity, preparation in information and experience, satisfactory status of speech, visual and auditory discrimination, and the like. All too frequently the child is forced into the reading program before satisfactory maturity has been achieved. This frequently leads to reading disability.

The author should be commended for his able evaluation of hereditary factors, handedness, eyedness, eye-movement habits, and physiological status as factors in reading disability. In fact, he is probably the first writer intimately associated with diagnostic and remedial reading programs who has appraised in a satisfactory manner the role of eye movements in reading. He points out that the more fundamental habits of perception are reflected in the eye-movement sequences. He does not commit the error of classifying poor eye-movement habits as causes of reading disability.

Each chapter has a complete summary and list of references. Appendixes outlining procedures for diagnosing reading readiness and disabilities, a comprehensive glossary of technical terms and an index are included.

Some will consider that the program of diagnostic measurement is too dependent upon specialized equipment and that there is a slight over-emphasis upon physiological factors in reading disability. Although the reader may find other minor details to criticize in this book, most will agree that the work is a worthy addition to the small group of able treatises on reading difficulties.

MILES A. TINKER
University of Minnesota

MONROE, WALTER S., and ENGELHART, MAX D. *The Scientific Study of Educational Problems* (New York: Macmillan Company, 1936), pp. xvi + 504. $3.00.

Until quite recently books dealing with methods of educational research have been of two types: (1) more general books on investigational procedure, usually rather brief and incomplete; (2) specialized

volumes devoted entirely to a single area, such as tests, statistical methods, the social survey, the questionnaire, historical research, experimental research, the interview, or case work, covering only a limited portion of the field of research methodology. During 1936 there appeared two exceptions to the characterization made in the preceding sentence. *The Methodology of Educational Research* by Good, Barr, and Scates is a comprehensive general treatment of investigational procedures, while the book under review combines a rather brief general discussion of research methods with an elaborate analysis and interpretation of statistical techniques. As a matter of fact, in the latter instance, the authors express the hope that their volume may find a place as a text in statistics courses.

The topics which receive rather brief treatment, for the purposes of a thorough, comprehensive general course in educational research, are: the interview, questionnaire, rating instruments, observation, analysis of documents and activities, library procedure, historical research, and survey types of investigation. The topics most fully treated include statistical techniques (especially problems of error, prediction, and correlation), construction of testing instruments, experimental procedure, philosophical problem solving, and evaluation of research. The appendix includes a list of statistical symbols. Important topics omitted are: case work, the genetic method, and preparation of the research report. The most useful and readable chapters for the student without a good statistical background are those dealing with the characteristics of scientific method, definition of the problem, techniques for collecting data, the historical method, the place of philosophy (determining what should be), evaluating and synthesizing or summarizing research, and progress toward a science of education.

In view of the present organization and content of research courses, it is a bit difficult to predict the field of greatest usefulness of the volume; possibly it will serve most frequently as a reference work and for supplementary reading. Comprehensive general courses on the methodology of educational research will find the book's statistical content far in excess of the usual emphasis. Separate courses in statistical techniques ordinarily use a text devoted wholly to the special problems of analyzing and interpreting data. The volume leaves a distinct impression of being sound, scholarly, and well documented, although the heavy statistical content is an obstacle to the development of an interesting style.

CARTER V. GOOD
University of Cincinnati

TIPPETT, JAMES STERLING, in collaboration with The Committee of the Parker School District, Greenville, South Carolina. *Schools for a Growing Democracy* (Boston: Ginn and Company, 1936), pp. vii + 338. $2.00.

At first blush, this book, written by Mr. Tippett in collaboration with The Committee of the Parker School District, of Greenville, S. C., seems the long-awaited answer to the progressive educator's question: "Can modern methods of education be used in a public school?" The answer here given is an unequivocal "Yes." In a district with a school population of 7,000, all that has been proposed by "child-centered school" enthusiasts for the last forty years is in actual use. The "demands of the democratic state" are heard and adhered to: progressive theory is shown in action; teachers trained to do modern things are given a free hand; the classrooms have all been changed to

activity rooms; the materials of all ages and all the world are made available for use; the school reaches out into the community; the community flows through the school, and is being made over on intelligent lines in the process; and the problems of the world are dealt with critically, creatively. That's what appears on the surface of the book, at least.

Unfortunately, "off the record," the accomplishments seem not quite so certain. Greenville is a "mill area," and there are rumors that, within the last year or two, the "leading citizens" of the community have begun to realize that such a critically intelligent program of education may become a danger to the established order. The rumor adds that support has been partially withdrawn, and that "the bosses" have "cracked down" on the school. It is to be hoped that these rumors are baseless. Perhaps this suggestion will lead some one who knows to give us the latest facts.

JOSEPH K. HART

Columbia University

REECE, ERNEST J. *The Curriculum in Library Schools* (New York: Columbia University Press, 1936), pp. ix + 220. $3.00.

The latest of the series of studies in library service has for its aim the presentation of considerations, touching the curriculum of library schools, which are important to *prospective teachers* in such schools. Questions of teaching and administration have been omitted and left for other treatment.

The work is divided into eleven chapters, the first two of which present pictures of library work as it has been and as it is becoming. A review of what is "accepted and expected" of libraries is a pertinent beginning for any discussion of the curriculum in the library school.

The picture of the library of tomorrow suggests the use of mechanical devices where possible, the addition of film and sound records to book stock, delivery of books to the reader, and country wide book service. In the process of reorganization the author sees the use of graded schemes of service, either through individual libraries, civil service systems or state certification plans. Greater uniformity in records and in cataloguing which would reduce time and cost is visualized, with the incidental adoption of authoritative terminology, covering both processes and positions.

Following internal re-organization, a more complete coördination among libraries, such as a division of their fields of service and the extension of coöperative enterprises would be logical steps toward more effective and far reaching service.

The librarian of tomorrow should be an expert in his field, an administrator, a trained investigator, capable of advancement in librarianship, or of transfer to other positions of leadership.

The next two chapters deal with the beginnings of library schools and the growth of the curriculum as it has developed in United States and Canada. Apprentice and training classes arose in the same period, and a correspondence course was projected, but nothing came of it. Courses were *practical* in content as well as in length. *Processes* were the chief interest.

Committees of the American Library Association concerned with library schools date back as far as 1883, and the question of standards was raised as early as 1902 when a minimum list of subjects of instruction was drawn up. By 1909 the Professional Training Section of the American Library Association had come into existence. The Temporary Library Training Board framed its proposals in 1924, as a result of which there was

created the Board of Education for Librarianship "empowered not only to inspect, evaluate and to express judgments on various agencies, but to exert whatever pressure might inhere in a public classification of schools." The chief influence has been to urge university affiliation for library schools.

A rise in educational level of the American population has been responsible for modification of curriculum and teaching. The present day curriculum in the library school is "a reflection of beliefs as to what library work comprises and the product of experiment and experience stretching from 1887 to the present."

Chapter five is devoted to the outlining of matter and processes pertinent to librarianship. This chapter, in particular will be useful to library school faculties as a pattern for curriculum building and revision.

Discussion of adaptations of the curriculum in the light of objectives of the particular school follows. Whether instruction shall be functional, providing a picture of each large area of work as a unit, or systematic, stressing individual subjects and their processes, is considered. Uniformity among the various schools is neither expected nor desired.

The next chapter concerns itself with variations, extensions and abridgments of the curriculum. Elective courses which recognize existing diversities in library work, preferential arrangements where students pursuing common courses are divided into groups representing libraries of several types, parallel programs for various types of libraries are some of the variations mentioned. Extensions imply "enlarging and diversifying" and include whatever remains after the basic curriculum has been made, in general, work leading to the M.A. or Ph.D. degrees. Abridgments, such as apprentice and training classes, have usually been carried on in response to a "transitional or localized need" and have never been satisfactory to the profession as a whole.

Modifications of the curriculum include such things as may be done outside the limits of the curriculum, and are here concerned particularly with field work and student guidance. The author agrees that the performance element is important, but under present conditions field work is for the most part little more than time serving. Summer assignments as post school service or internships are suggested as alternatives. Student guidance has regard for the health and morale of students, direction as to methods of study, management of a student's time and advice relative to the future.

Chapter nine places the curriculum in the university, with the first graduate year as the preferable plane. This assures a minimum of general education which is not too high for the requirements of practice.

As he views the curriculum in perspective, the author draws a distinction between "training" and "education" for librarianship, the latter being mainly concerned with a "definite body of knowledge, possession of intellectual responsibility, judgment, initiative, and appreciation of purposes and standards of tasks in view" — the things prerequisite to practicing a profession. The author hopes that placement work may be taken out of the hands of library schools and leave adequate time for concentration on the primary function of teaching.

In the final chapter conditions for the curriculum are presented. Careful selection of the instructional staff, with each member of that staff carrying the kinds of teaching for which he is most fitted, and in which his chief interest lies; service load of faculty members within efficient limits, and sufficiently staffed to permit members time "for contacts with

libraries, for work with professional organizations, for study, investigation, writing." An extensive book collection, suitable working quarters, adequately furnished "measure fitness of an institution for library school instruction." Admission standards should be sufficiently high to meet the field needs as these are understood, but some latitude is desirable to care for exceptions.

A very careful, detailed piece of work, useful not only to the very small group of people to whom it is addressed, but also to those now holding teaching positions in library schools, particularly in schools where the curriculum is at the present time in the process of revision.

FLORENCE R. VAN HOESEN
University of Chicago

CASTIELLO, JAIME. *A Humane Psychology of Education* (New York: Sheed and Ward, 1936), pp. XXIII + 254. $2.50.

This book, which is primarily a protest against mechanism and materialism in human psychology, never permits itself to lose contact with the teachings of the Church. Running all through is the thesis that the mental processes of man are fundamentally different from those of the brute, both quantitatively and qualitatively. For a treatment which claims to be scientific it offers singularly little by way of experimental evidence in support of the arguments advanced. The author has not been too careful in many of his statements. For example, commenting on completion and true-false test items he says (p. 38): "On the other hand the completion and true-false tests barely skim the surface of the mind. They are tests of memory and nothing more." Few authorities on testing will admit that such a statement need be true. Again we read (p. 40): "No psychologist thinks it of the slightest importance whether a boy has an intelligence quotient of 20 or 22. Both numbers signify very good intelligence." The error here should probably be ascribed to careless proof-reading.

This book may find a place in religious schools and colleges. It will hardly appeal to the conventional educational psychologist.

JOHN A. LONG
University of Toronto

RINSLAND, HENRY D. *Analysis of Completion Sentences and Arithmetical Problems as Items for Intelligence Tests.* Contributions to Education No. 666 (New York: Bureau of Publications, Teachers College, Columbia University, 1935), 49 pp. $1.60.

The material used in this investigation was the completion (C) and Arithmetical (A) items from Thorndike's C A V D Intelligence Tests. These items offered statistical advantages to the experimenter in that they were already scaled in difficulty with reference to an absolute zero. The material was presented to ninety-seven pupils from grades six, seven and eight for nineteen experimental periods, and the primary data for studying C and A functions as elements for measuring intelligence consisted of a mean initial score, a mean final score, a mean gain, and a mean percent gain for each subject. Among other things it was found that final scores were much more variable than were initial scores; that intelligence test scores correlated lowly but positively with mean initial scores, and rather highly with mean final scores, mean gross gains, and mean percent gains; that C and A are extremely valuable as units in intelligence tests.

JOHN A. LONG
University of Toronto

FLANAGAN, JOHN CLEMANS. *Factor Analysis in the Study of Personality* (Stanford University: Stanford University Press, 1935), pp. x + 103. $1.25.

This study is an analysis and description of the factor theory, including a survey of factor analysis techniques in present use. Treatment of three sets of data by Hotelling's method is presented, and a technique for obtaining uncorrelated test scores is described, and applied to a specific sample. Four methods of statistical analysis are concisely presented in an eleven page appendix—four methods of interest in educational research. One hundred seven titles appear in the bibliography.

The aims of the monograph, as set out in the Preface are: "to give a critical review of the factor theory and its development, including the very recent contributions of Thurstone and Hotelling; to develop a general technique for constructing tests to measure independent components directly; to provide a new method for determining the values to be attached to individual responses, namely, an iterative method of solving for regression coefficients without computing intercorrelations; and to present two measures of independent components representing almost all of the information contained in an original set of four variables." The author achieves these aims.

Librarians will probably catalogue this monograph under "Statistical Method," rather than "Personality," and rightly so, yet most interesting conclusions about personality appear in chapter five. Flanagan finds most theories of personality to be based on "very insecure foundations." From his study of marks in eleven courses made by four hundred ninety-seven cadets at the United States Military Academy, he finds three factors contributing to success, with a large common factor most prominent. In a group of ten achievement tests given to about one thousand college sophomores, a large common factor again appears. When the scores on the four scales of the Bernreuter Personality Inventory are analyzed (305 eleventh grade boys), two factors suffice. The conclusion is that it does not appear reasonable to fix rigidly any terms at the present time, with the comment that Spearman's "g" does not seem to be "sufficiently clearly distinguished from other factors to be considered a fixed point of reference."

HAROLD V. GASKILL
Iowa State College

CATTELL, RAYMOND B. *A Guide to Mental Testing; for Psychological Clinics, Schools and Industrial Psychologists* (London: University of London Press, 1936), pp. xvi + 312. 10s 6d.

The book is further described on the front page as "being a Handbook of Tests of Intelligence, Attainment, special Aptitudes, Interest, Attitude, Temperament and Character." It is also provided with a foreword by William Moodie, Medical Director, London Child Guidance Clinic, wherein he writes, "Here, for the first time, is collected under one cover, reliable information on all aspects of the subject."

Of course no book can do all that. No book can be a Guide to mental testing and at the same time a Handbook of all mental tests under the sun, and then in addition present reliable information on all aspects of the subject. It looks like an application of hyperbolic American advertising methods, and yet the book comes from conservative Old England.

After one has recovered from the shock of the front page and forgotten its claims and settled down to the text itself, the book should prove exceedingly interesting to the American psychologist. It could never be of use as a guide to mental testing in this country, but it contains information about several tests little known here. Again, the relative emphasis on different types of tests is interesting.

Much less than half the book is devoted to intelligence testing. Much space is given to character and personality testing. There are great surprises too. The venerable Binet-Simon Scale is classified under Performance Tests, "both because of its nature and because of the fair amount of 'F' factor (practical ability) which Alexander's research shows it to contain." Also the author writes that he finds "no scientific evidence for its being as valid as most of the tests devised since Spearman's principles were discovered." Is the Binet due for extinction? The author's own tests figure very largely in the book and this is natural and certainly valuable for American workers, but one doubts the value of putting in 8 pages of norms for the Cattell Tests. Directions for giving and scoring those tests are not in this book and so an examiner would have to get the manual of directions anyway. Norms, giving and scoring directions all belong together, either all in a "guide" or all in a manual, not scattered about through both.

There is ample evidence in this book that British psychologists are producing their own intelligence tests. Of the 32 group tests mentioned, 27 are British and only 5 are American. All of the four pre-school tests however are American.

When we come to the discussion of tests of interest, temperament, personality and character, the influence of the Spearman approach to testing is very obvious. Factors such as "w," "p," "c" and "f" are all introduced; they are translated into psychological traits and their existence assumed; "w" is will power, "p" is perseveration, "c" is surgency and so on.

Tests not well-known or perhaps unknown in this country are contained in this book. There is a long interest test in 15 sections, each section purporting to measure a type of interest. Section one measures travelling, holidaying, geographical interests with 10 information questions; section two measures sporting, militaristic and primitive masculine excitements generally again with 10 questions; and so on for 15 groups of interests. It seems preposterous. No evidence of validity is presented and only one reference to a journal article is given. One hopes that there is much research back of this, to warrant its being included in a guide for school psychologists to be used, probably without question, on English school children.

The "f" factor or fluency of association is measured by an interesting test presented in detail in the book. A "projection" test for dispositions (e. g., assertive, submissive, gregarious, etc.) is also given in detail and it would seem to be an interesting test for further experiment. The well-known perseveration tests are also included. General questionnaires of the Woodworth, Thurstone, Bernreuter type are rather frowned down upon by our author. Instead of this he presents separate questionnaires for different syndromes. These seem to be relatively new, and the author himself says there are no norms and appeals to other psychologists for "any norms, validities and consistencies found in particular researches." So again one questions the advisability of putting them in a "guide" for mental testing.

Altogether this is a queer book; useless in this country as a text or guide or handbook for any aspect of mental testing, but at the same time intensely interesting and valuable in spots for the American research worker. From it he may derive some very interesting suggestions and it would be well to try out some of the author's new tests of attitude, temperament, etc., in this country.

R. PINTNER
Columbia University

RESEARCH ABSTRACTS and BIBLIOGRAPHIES

Address all communications relative to research abstracts and bibliographies to A. S. Barr, University of Wisconsin, Madison, Wisconsin.

BULLETINS

BAKER, HARRY J. "Mental Hygiene and Adjustment," *Review of Educational Research*, Vol. No. 5 (Washington: National Education Association, 1936), pp. 458-576.

This issue of the Review contains discussions of historical development and modern trends, school influences, community influences, the normal child, behavior problems and delinquency, physically and mentally exceptional children, and technics and instruments of mental hygiene. Bibliography.

BOYER, PHILIP A. *Report of the Division of Educational Research and Results* (Philadelphia: Board of Public Education, 1936), 44 pp.

The author discusses the following topics: age grade survey, enrollment trends, pupil progress, mental ability, ability adjustments, class size and teaching load, individual pupil records, and pupil performance measured by objective tests.

BRIGGS, THOMAS, and OTHERS. *The Function of Secondary Education*, XXI, No. 61 (Chicago: Department of Secondary School Principals of the National Education Association, H. V. Church, Executive Secretary, 5835 Kimbark Ave., 1937), 266 pp.

Contains a discussion of each of the ten functions of secondary education set up by the committee on orientation.

DIXON, HENRY A. *The Administration of State Permanent School Funds.* Southern California Education Monographs, No. 9 (Los Angeles: University of Southern California Press, 1936), 145 pp.

After stating the problem, the author discussed the historical and legal background of Utah's permanent school fund, its present status, and the Utah State land department, with a summary and recommendations. Bibliography.

FRANCES, SISTER CATHARINE. *The Convent School of French Origin in the United States, 1727 to 1843* (Philadelphia: University of Pennsylvania, 1936), 246 pp.

After a brief survey of convent schools in the United States, 1727 to 1843, the author discusses the Ursulines, the religious of the Sacred Heart, the Sisters of St. Joseph, the Sisters of Providence, the Sisters of the Holy Cross, administration of the convent school, the curricula in the convent school, and the extra-curricular activities. Bibliography.

Financing Public Education, Research Bulletin of the National Education Association (Washington: National Education Association, 1937), 54 pp.

This bulletin contains a discussion of expenditures for public education, 1933-34; the federal government and financing education; the states and financing edu-

cation; local financing and public schools; economic ability of the states to support education, and current issues.

GRAY, RUTH A. *Bibliography of Research Studies in Education, 1934-35*, No. 5 (Washington: U. S. Department of Interior, 1936), 287 pp.

An annotated bibliography of research in education for the year September, 1934 to August, 1935.

HELLER, J., and OTHERS. *Bulletin of the International Bureau of Education* (Geneva, Switzerland: 44, Rue des Maraichers, 1936), pp. 159-208.

Contains a summary of data secured in an inquiry on the teaching of modern languages, the educational world, education for peace and international coöperation, and school legislation. Bibliography.

HOLY, T. C. *Comparison of Costs per Pupil in Average Daily Attendance in Ohio City and Exempted Village School Districts for 1934-35 and 1935-36* (Columbus: Ohio State University, Bureau of Educational Research, January, 1937), 20 pp.

This report attempts to show the relative changes in costs per pupil in average daily attendances in Ohio city and exempted village school districts in 1934-35 and 1935-36, from data taken from the "Annual Financial Report of Board of Education" and the "Annual Statistical Report of the Public Schools," both reports found in the office of the Director of Education of Ohio.

KANDEL, I. L. *Examinations and Their Substitutes in the United States*, No. 28 (New York: Carnegie Foundation for the Advancement of Teaching, 1936), 183 pp.

The author discusses the problem of examinations, the traditional examination, the scientific attack on examinations and conclusions.

MYERS, ANNA G. *Report of the Results of the Spring Testing in Kansas City, Missouri* (Kansas City: Bureau of Research, 1936), 28 pp.

This report contains an analysis of tests given in Kansas City in Spelling, Arithmetic Fundamentals, Handwriting, Language, Reading, Geography, and History, in the spring of 1936, in the elementary grades. A supplement is added for colored schools.

MYERS, ANNA G. *Results of High School Testing* (Kansas City: Bureau of Research, Public Schools, 1936), 13 pp.

This report contains an analysis of tests given in Kansas City to the high schools in Foreign Language, English, Mathematics, Science, History, and Economics. Comparisons are made with norms of earlier tests given in the city schools.

NELSON, M. J. *An Experiment with Optional Attendance* (Cedar Falls, Iowa: Bureau of Research, Iowa State Teachers College, 1936), 4 pp.

The author attempted to measure the degree of difference in achievement in three classes, Geography, Nature Study, and American Government, between students that were required to attend classes and those that were allowed to attend at will. Through the use of comprehensive reliable tests prepared by the instructor the author feels that the measurement has significance. Some interesting results are found from this study.

PAPKE, PAULINE M., and OTHERS. *Teachers Stand in Line*. Report of the Unemployment Committee of the New York Teachers Guild (New York: 1936), 30 pp.

A study of teacher unemployment in the New York city schools.

PAUL, J. B. *A Comparison of the Attainment of the Iowa State Teachers College Sophomores with the Attainment of Sophomores in Other Higher Institutions of Learning* (Cedar Falls, Iowa: Bureau of Research, Iowa State Teachers College, 1937), pp. 7.

Three Coöperative Tests, the General Science, Contemporary Affairs, and World History, constructed in 1936 were administered to the Sophomores of Iowa State Teachers College and other similar groups in 101 colleges for purposes of comparison. The results are recorded in this study.

PAUL, J. B. *A Study of the Grades Assigned to Students by the Faculty of the Iowa State Teachers College during the 1934-35 Academic Year in Courses Giving College Credit* (Cedar Falls, Iowa: Bureau of Research, Iowa State Teachers College, 1935), 25 pp.

The number of grade points assigned by each faculty member and by departments during the academic year 1934-35 for each student term hour for which a passing or failing grade is given. Tables are presented of all information.

PAUL, J. B. *An Experiment Comparing the Effectiveness for Learning of a Five and a Three Period-per-week Class Schedule* (Cedar Falls, Iowa: Bureau of Research, Iowa State Teachers College, 1936), pp. 4.

Four classes, two in the introduction of Education, one in Elements of Geography, and one in General Science were used in this study to measure the effectiveness of a three or five period per week, as measured by objective tests. Questions for further study are listed also.

PAUL, J. B. *Relation of Placement Test Scores to Mortality and Scholastic Ratings* (Cedar Falls, Iowa: Bureau of Research, Iowa State Teachers College, 1936), 17 pp.

Three placement tests, the American Council Psychological Examination, the Iowa English Test and the Nelsen-Denny Reading Test, were given to the freshman class of 1931, 699 pupils. This study is an attempt to determine what has happened to this group of students since they were admitted to the college. An attempt was made to answer such questions, as, Have they graduated from some curriculum?, Were they dropped for low scholarship?, Are they yet in school?, and Does there seem to be any significant relationship between the scores made in the placement tests and the students later performance in college? Numerous graphs are presented.

PAUL, J. B. *Sophomore Tests — 1935* (Cedar Falls, Iowa: Bureau of Research, Iowa State Teachers College, 1935), 7 pp.

A battery of tests in each of the following fields: General Science, Contemporary Affairs, Mathematics, French, German, Spanish, and Latin were given to the sophomores of Iowa State Teachers College and ninety-three other colleges participated in giving the same tests to its sophomores. A comparison of the achievements of various groups are tabulated and graphs constructed.

RAINEY, HOMER P., and OTHERS. *Bulletin of the Bureau of School Service*, No. 2 (Lexington: University of Kentucky, 1936), 205 pp.

Contains papers read before the 13th annual Educational Conference and the second annual meeting of the Kentucky Association of Colleges and Secondary Schools.

EDUCATIONAL ADMINISTRATION AND SUPERVISION

HALL, ROBERT K. "Recent Court Decisions on the Dismissal of Teachers," *Educational Administration and Supervision*, XXIII (January, 1937), pp. 21-34.

The author presents a summary of court decisions 1933-35, on the dismissals of teachers.

KYTE, GEORGE C. "Causes of First-Grade Non-Promotion in the Light of Measured Intelligence," *The Elementary School Journal*, XXVII (February, 1937), pp. 415-429.

An analysis of the causes of first grade non-promotion in the light of measured intelligence. The large number of non-promotions among pupils of average and superior intelligence deserves special attention.

ROGERS, DON C. "Textbook Administration," *Chicago School Journal*, XVIII, No. 3-4 (November-December, 1936), pp. 50-56.

The author presents a discussion of textbook administration in the Chicago public schools, with data on costs, savings, etc.

WHITE, ROBERT, JR. "The Extra-Curriculum in the Public High Schools of Chicago," *The School Review*, XLV (February, 1937), pp. 112-123.

The author presents a survey of extra curricular activities in Chicago concluding that the program lack organization and direction.

METHOD OF LEARNING AND TEACHING

HIGHLEY, BERNICE M., and BERNARD R. "An Effective Method of Learning to Spell," *Educational Research Bulletin* (Columbus: Ohio State University, 1936), pp. 235-242.

The authors describe and present data on the effectiveness of a new method of spelling.

WITTY, PAUL A., and KOPEL, DAVID. "Studies of Eye-Muscle Imbalance and Poor Fusion in Reading Disability: An Evaluation," *Journal of Educational Psychology*, XXVII (December, 1936), pp. 663-671.

The authors presenting a summary of previous investigations relating to eye-muscle imbalance concluding that while this factor is important, it may be over emphasized.

CURRICULUM

DAWSON, MILDRED A. "Children's Preferences for Conversational Topics," *The Elementary School Journal*, XXXVII (February, 1937), pp. 429-438.

The author finds that personal experiences, play, and school activities rank high among children's preferences for conversational topics.

THORNDIKE, EDWARD L. "The Vocabulary for Children in Grades Three to Eight," *Teachers College Record*, XXXVIII (February, 1937), pp. 416-429.

This is part III of an article on the vocabulary of books for school children. This part considers the frequency of incurrence of various books recommended for pupils in grades 3 to 8.

MEASUREMENTS, STATISTICS, AND SCIENTIFIC TECHNIQUES

BIRD, CHARLES, and ANDREW, DOROTHY M. "Concerning the Length of New-

Type Examinations," *Journal of Educational Psychology*, XXVII (December, 1936), pp. 641-654.

From an experimental study of the reliability of tests of different lengths, the authors conclude that the new type test might be much shorter than they usually are.

HERMON, V. A. C. "The Prediction of Scholarship in the College of Letters and Science at the University of Wisconsin," *School and Society*, XLV (February 6, 1937), pp. 191-194

The author presents an evaluation of the factors which may be used in forecasting scholarship in colleges of liberal arts.

SCATES, DOUGLAS E. "Unit Costs in the Administration of a Standardized Test," *Educational Research Bulletin* (Columbus: Ohio State University, 1937), pp. 38-46.

The author presents data on the unit cost of the administration of standardized tests.

VAN ALSTYNE, DOROTHY. "A New Scale for Rating School Behavior and Attitudes in the Elementary School," *Journal of Educational Psychology*, XXVII (December, 1936), pp. 667-693.

The author presents a copy of the Winnetka scale for rating school behavior with statistical data relating to its validity.

VOTAW, DAVID F. "The Effect of Do-not Guess Directions upon the Validity of True-False or Multiple-Choice Tests," *Journal of Educational Psychology*, XXVII (December, 1936), pp. 698-703.

The author presents experimental data of the effect of Do-not guess directions from which he concludes that the do-not-guess directions place the ascendant student at an advantage over the submissive student.

MISCELLANEOUS

WHITMER, ELEANOR M. "School Library Studies and Research," National Education Association and the American Library Association, Reprint for the *Library Quarterly* (October, 1936), pp. 382-404.

The author discusses the areas of school library research and lists recent investigations.

ELLIS, D. B., and MILLER, L. W. "Teachers' Attitudes and Child Behavior Problems," *Journal of Educational Psychology*, XXVII (October, 1936), pp. 501-511.

A study based upon Wickman's work in which the seriousness of various behavior problems are rated by different groups of workers.

RESEARCH NEWS and COMMUNICATIONS

Address all research news and communications to Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

Yearbook on International Understanding.—At the Minneapolis meeting of the National Society for the Study of Education (1933) James T. Shotwell of Columbia University suggested the preparation of a Yearbook on International Understanding. The Board of Directors accepted the suggestion but, owing to the uncertainty in world affairs which followed shortly thereafter, decided to postpone the preparation of the volume for a time. Two years later it was decided to proceed with the plan. A general outline for the Yearbook was presented by I. L. Kandel to the Board of Directors at its meeting in Atlantic City in 1935. It was the sense of the Board that the Yearbook should appeal to teachers at all levels of the school system below the college without being of a propagandistic nature.

The details for the Yearbook were discussed and drawn up by a Committee consisting of I. L. Kandel, Columbia University, as Chairman; William C. Bagley, Columbia University; Superintendent A. J. Stoddard, Providence, Rhode Island; Daniel A. Prescott, Rutgers University; Margaret Kiely, Principal of the Teachers College, Bridgeport, Connecticut; and Esther C. Brunauer, Assistant Director of the American Association of University Women. Considerable interest was manifested by a number of well-known leaders in international affairs in this country, and the counsel and advice of Professor Shotwell at all times proved to be of great value to the Committee. The contribution which such a volume might make to clarifying the problem of developing international understanding through the schools was recognized by a grant from the Carnegie Corporation of New York for the preparation of the Yearbook.

The Committee agreed that the task of developing international understanding through the schools could not be delegated to any one subject, but that if it is to be adequately performed every part of the school curriculum from the earliest grades through the senior high school must be utilized. It was accordingly decided to secure articles on each one of the subjects included in the curriculum of elementary, junior, and senior high schools in order to bring out the fact of international interdependence and to indicate how every teacher and every subject can contribute toward the development of international understanding. In accordance with the suggestions of the Board of Directors of the National Society for the Study of Education, controversial issues or discussions of existing agencies for international coöperation were to be excluded. In the same way courses on international relations were also omitted, since it was felt that such courses could be better built upon foundations laid through all subjects, treated according to the plan adopted for the Yearbook.

The Yearbook accordingly consists of

thirty-five articles to which unity is given by the emphasis on the contribution that each can make toward international understanding. It is divided into five divisions as follows: "General Problems," "Public School Curricula and International Understanding," "The School Curriculum," "Teachers and Teaching Aids," and "Some Type Studies." The section on materials of instruction and sources of information in the United States should prove to be of great service to teachers. Two type studies—one on "Pacific Relations" and the other on "American-Canadian Relations"—will help to indicate the scope of and methods of approach to some special problems of interest to the United States. It is the hope of the Committee that the Yearbook will be a practical and concrete contribution which will concentrate the interest of teachers on the problem and will eliminate much of the superficial sentimentality with which discussions of international understanding have in the past been affected, on the one hand, and be free from the suspicion of propaganda which has attended proposals for developing international understanding on the other hand. At the same time, while the Committee has recognized that there may be other methods of approach to the problem, it has endeavored to produce a Yearbook which will acquaint all teachers at all levels with the opportunities offered by any subject of the public school curriculum.

This statement was prepared by the Chairman of the Committee, I. L. Kandel. The Yearbook was published in February, 1937.

Australia and New Zealand.—From time to time these columns have reported the research activities of the Councils for Educational Research in Australia and New Zealand, which are supported in part by the Carnegie Corporation of New York. These two organizations are sponsoring educational conferences to be held during the coming summer, at which many of the same speakers will be present. At least two American speakers will attend—L. D. Coffman of the University of Minnesota and Harold Rugg of Columbia University. The anticipated cost (9,000 pounds) of the conference in Australia is being met in part by a $12,000 grant from the Carnegie Corporation.

The New Zealand Council has published an 84-page *Bibliography of New Zealand Education*, by Mary Mules and A. G. Butchers, which lists the various documents and sources of information covering nearly a century.

Radio Script Exchange.—The U. S. Office of Education, in the interest of better educational radio programs throughout the country, has established an educational radio script exchange to furnish local groups radio scripts especially appropriate for educational broadcasting. A catalogue listing 53 educational scripts has been mailed to more than 5,000 broadcasting units, including high schools, colleges and universities, broadcasting stations, CCC camps, and civic organizations that have shown an interest in educational broadcasting. Additions to the catalogue will be issued from time to time. A radio production manual and a glossary of radio terms have been prepared to supplement the scripts. The manual includes many helpful suggestions for meeting problems encountered in producing radio programs. The glossary is a workbook of terms peculiar to radio, defining many of these at length and giving comprehensive information about phrases and signals used in the radio studio. Single copies of the scripts and aids to production will be sent free of charge to any producing unit.

provided the material is to be used for non-commercial broadcasts, "mock-broadcasts" over loudspeaker systems, or any educational purpose. Copies of the script catalogue are free of charge to interested persons.

Forum Service.—A counseling service on program planning for adult civic education in public forums is being offered by the Office of Education in connection with Federal Public Forum Projects. As a result of the operation of ten forum demonstration centers in ten states during recent months, the Office of Education has received thousands of requests for information concerning these programs of public discussion. In order to make the demonstration of these projects of maximum value to other communities in developing programs of their own, an information service from the Office of Education in Washington will augment the activities of the local projects in making available the experience of the program. Paul H. Sheats, Director of the Chattanooga-Hamilton County Public Forum Project, has been added to the staff as a field supervisor and associate of the assistant administrator, Chester S. Williams. In addition to the ten public forum demonstration centers which have operated programs since September, 1936, nine new demonstration centers began schedules the first of February, 1937.

American Council on Education.—The Problems and Plans Committee of the American Council on Education is doing a valuable service for education through its promotion of major investigational projects and through its several sub-committees. These sub-committees are: Academic Freedom and Social Responsibility, Coöperation among Institutions of Higher Education, Occupational Training and Vocational Adjustment, Place of Radio in Organized Education, Research Fellowships and Grants-in-Aid of Research in Education, Study of Business Education, Study of the Master's Degree, and Teacher Training Problems. The members of the Problems and Plans Committee are: E. C. Elliott, H. W. Holmes, J. H. McCracken, C. R. Mann, Mark A. May, Paul R. Mort, Eugene R. Smith, Payson Smith, Paul C. Stetson, George D. Stoddard, and J. W. Studebaker.

Favorable consideration has been given to the proposal that the Council issue a handbook on elementary and secondary education as a companion volume to *American Universities and Colleges*, the third edition of which was issued in the spring of 1936.

Youth Commission.—Activities of the American Youth Commission of the American Council on Education now include a number of projects and special inquiries. Among the projects and studies are: youth needs in a state (Maryland), youth needs in a small city (Muncie, Indiana), youth needs in a medium-sized city (Dallas, Texas), inventory of 30,000 youth (Pennsylvania), and the evaluation of the Civilian Conservation Corps. Special areas are being explored as follows under the direction of the persons named: youth population, Newton Edwards; youth attitudes, H. H. Remmers; citizenship education, Henry Harap; youth in villages, Edmund de S. Brunner; negro youth, Allison Davis; and home and parent education, Joseph K. Folsom. The director of the Commission is Homer P. Rainey.

The State and Higher Education.—The American Council on Education and the Carnegie Foundation for the Advancement of Teaching have been active during recent years in studying the legal as-

pects of education, especially the relation of the state to higher education. Pertinent publications of the American Council include: Brody, *The American State and Higher Education*, 1935; Chambers, *State Educational-Administrative Organization*, 1936; and the National Advisory Committee on Education, *Federal Relations to Education*, 1931. The Carnegie Foundation has published: Elliott and Chambers, *Charters and Basic Laws of Selected American Universities and Colleges*, 1934; Hill, *Control of Tax-Supported Higher Education in the United States*, 1934; and Kelly and McNeely, *The State and Higher Education*, 1933.

Coöperative Test Service.—The Coöperative Test Service of the American Council on Education announces two new publications: (1) The *Coöperative Achievement Tests:* A Handbook Describing Their Purpose, Content, and Interpretation. This Handbook includes descriptive material on the Coöperative tests, much of which has been available in separate publications but which has not heretofore been brought together in one volume, as well as new material on the interpretation of the test results, including an explanation of the new system of Scaled Scores. (2) *Bulletin of Information on the International Test Scoring Machine.* This machine promises material aid in reducing one of the most troublesome obstructions to the extensive use of tests for guidance and other purposes, and accordingly should be of interest to all who are concerned with the construction or use of objective tests. The director of the Test Service is Ben D. Wood, 500 W. 116th Street, New York City.

General Education Board.—The annual report of the General Education Board for 1935-36 describes its activities for the year concerned with general education, child study, training of personnel, the Southern program, emergency grants, medical education, and certain miscellaneous grants. Appropriations made during the year were $9,489,358. The projects in the field of general education supported by the Board include: the American Youth Commission of the American Council on Education, Educational Policies Commission of the National Education Association, general budget of the Progressive Education Association, conference program of the American Council on Education, Commissions on the Relation of School and College, on Human Relations, and on the Secondary School Curriculum of the Progressive Education Association, a publication of the Society for Curriculum Study entitled "Building America," Committee of Twenty-one of the Regional Accrediting Associations, Study of College Success by the Progressive Education Association, and film programs of the American Council on Education and the Progressive Education Association.

Carnegie Foundation.—The thirty-first annual report of the Carnegie Foundation for the Advancement of Teaching is for the year ending June 30, 1936. President W. A. Jessup discusses the exploitation of youth today and current educational administration as a form of compromise. W. S. Learned questions the adequacy of the training of secondary teachers, using data secured from the Pennsylvania study. A. Z. Reed discusses the contribution of the medieval university to American higher education.

For grants for eighteen special research projects in education during the year Carnegie Corporation of New York paid to the Division of Educational Enquiry of the Carnegie Foundation $94,500, which the Foundation disbursed. Among

the institutions at which research was furthered by this series of grants are Alberta, Chicago, Harvard, Iowa, Minnesota, Purdue, Stanford, and Syracuse. The following organizations also have sponsored research under Carnegie grants: American Council on Education, National Conference of Bar Examiners, American Association of University Professors, National Education Association, Progressive Education Association, Educational Records Bureau, School Art League of New York City, and the Secondary Education Board.

On June 30, 1936, the Foundation had resources of $26,794,272. During the preceding year the Foundation received $1,387,772.04 as income from interest and dividends on securities. It disbursed $1,870,234.23 on account of retiring allowances and widows pensions, $65,746.59 for studies conducted in its Division of Educational Enquiry, and $94,500 on grants for special research projects carried forward at American and Canadian universities and by various bodies and associations.

Since 1905 the Carnegie Foundation for the Advancement of Teaching has disbursed more than $30,800,000 in retiring allowances and widows pensions, or more than double its General Endowment Fund. Of these disbursements Harvard University has received more than $2,540,000; Columbia University $2,193,000; Yale University $1,951,000; Cornell University $1,419,000; the University of Michigan $999,711; and the University of California, $867,000.

Commonwealth Fund.—In its annual report for 1936, the Commonwealth Fund records appropriations amounting to $1,967,153.26, intended, in the words of its founder, Mrs. Stephen V. Harkness, "to do something for the welfare of mankind." Both income and appropriations for 1936 were larger than those of recent years, the gifts being the largest since 1931.

More than two-thirds of the total was devoted to the betterment of health. Grants were made for public health service to rural communities, rural hospitals, medical education, and medical research. Postgraduate education in medicine was emphasized, the Fund believing that such work is of major importance in improving the quality of medical service.

Rosenwald Fund.—A Review of Two Decades, 1917-1936, of the work of the Julius Rosenwald Fund covers two distinct periods of approximately a decade each. During the first period, from its creation in 1917 through the year 1927, the Fund was devoted to a special program of helping to build schoolhouses for Negroes in the southern states and was administered directly by its founder, Julius Rosenwald. During the second period, the Fund was enlarged into a general foundation under the control of an active and responsible Board of Trustees and under the direction of a group of officers who gave their full time to the work. In this period the activities of the Fund were expanded to include various aspects of Negro education and welfare and also programs in medical economics, library service, general education, social studies, race relations, and more recently, a special effort in rural education. Total expenditures during the twenty years were $13,236,083.

Curriculum Journal.—The *Curriculum Journal*, official organ of the Society for Curriculum Study, which began seven years ago as a mimeographed bulletin, became a printed publication with the January, 1937 number. It is a matter of satisfaction to note the growth of this helpful publication, edited by Henry

Harris executive secretary of the Society. The publication office is located at the Bureau of Educational Research, Ohio State University, Columbus, Ohio. The subscription price is $2.50 a year.

New Journals.—Growth is announced as a journal for studies of the basic factors, processes, and functions concerned in growth as a fundamental property of nature, whether in plants, animals, crystals, or populations. The secretary-treasurer is S. A. Courtis, University of Michigan, Ann Arbor, and the managing editor is N. J. Berrill, McGill University, Montreal, Canada.

International Pedagogical Information is described as an international clearing house for educational innovations and experiments. The editor is Ernst Papanek with publication offices in London, Paris, and Praha. English, French and German editions are published.

The Principia Press of Bloomington, Indiana, announces the *Psychological Record* as a coöperative journal, with the cost of printing to be paid by the author. Each manuscript will be printed immediately upon acceptance and will be published as part of an annual volume of some 500 pages.

Social Education is the official journal of the National Council for the Social Studies, published monthly, nine times a year, beginning January, 1937. It is published in the interests of all teachers of the social studies and history. It will be directed particularly to junior and senior high school teachers and instructors in teachers colleges, but will not neglect the elementary and college levels. *Social Education* will emphasize new developments in teaching methods and educational theory, teaching aids and materials, book reviews of interest and significance to teachers, accounts of current happenings connected with social studies teaching and with workers in this field, and articles of interest in professional, popular, and learned journals. The magazine is sponsored by the American Historical Association and the National Council for the Social Studies. It is edited by Erling M. Hunt, Associate Professor of History, Teachers College, Columbia University, assisted by Katharine Elizabeth Crane, formerly assistant editor of the *Encyclopedia of the Social Sciences*, together with an executive board. The publisher is the American Book Company.

John Dewey Society.—The John Dewey Society for the Study of Education and Culture was organized in February, 1936. Its sponsors say that the organization was named for John Dewey, not because the founders wished to devote themselves to an exposition of the teachings of America's greatest educator and thinker, but rather because they felt that in his life and work he represents the soundest and most helpful approach to the study of the problems of education. For more than a generation he has proclaimed the social nature of the educative process and emphasized the close interdependence of school and society. The purpose of the Society is to foster scholarly and scientific investigations of problems pertaining to the place and function of education in relation to society and social change, and to publish the results of such studies.

The Society's first yearbook, "The Teacher and Society," under the chairmanship of W. H. Kilpatrick, was published in February, 1937. Future yearbooks deal with: academic freedom; the high school in society, Harold Hand, chairman; and the social forces control-

ling the schools, Jesse H. Newlon, chairman.

The various chapters of the yearbook on the teacher and society discuss how the social aim of public education has been a principal emphasis of statesmen and educators throughout our national existence; how the present situation renews with peculiar urgency the demand for such a social emphasis; how the traditional and customary ways of conceiving the school, unless corrected, do and must thwart any efficient social effort; the type of teachers we now have as regards personality, source of supply, preparation, etc.; how the teacher should work in order to meet the social demands; the present status of the teacher in administrative affairs and possible better arrangements; the economic status of teachers; the social attitudes and information of teachers; the teacher in relation to the community; freedom of teaching; the teaching profession as a functional group in society; a proper preparation for teachers; and a glimpse into the future. The contributors are: John Dewey, George W. Hartmann, Ernest O. Melby, Jesse H. Newlon, George D. Stoddard, Hilda Taba, Goodwin B. Watson, and Laura Zirbes.

New Psychological Society.—The Society for the Psychological Study of Social Issues has two principal objectives. One is to encourage research upon those psychological problems most vitally related to modern social, economic, and political policies. The second is to help the public and its representatives to understand and to use in the formation of social policies, contributions from the scientific investigation of human behavior. The chairman is Goodwin Watson of Columbia University. A *Bulletin* will be published by the Society.

Educational Bibliographies. — *Bibliographies and Summaries in Education to July, 1935*, by W. S. Monroe, University of Illinois, and Louis Shores, George Peabody College for Teachers, has been published by the H. W. Wilson Company of New York. It is a catalogue of more than 4000 annotated bibliographies and summaries listed under author and subject in one alphabet. The list is to be kept up to date through the medium of the *Education Index*.

Curriculum Surveys. — Recent school surveys with a section or chapter devoted to the curriculum include the National Survey of the Education of Teachers; National Survey of Secondary Education; Report of the Commission on Social Studies of the American Historical Association; a state survey of Tennessee public schools at all levels by the Tennessee Educational Commission; the city surveys of Cincinnati and Euclid (Ohio), Evansville (Indiana), Wellesley (Massachusetts), and Rutherford (New Jersey); and a county survey of the rural schools of Monroe County, Indiana.

Curriculum Service.—The work of the Society for Curriculum Study, which has been delimited largely in terms of the interests of curriculum experts, will be expanded so as to stimulate interest and curriculum activity on the part of laymen, teachers, supervisors, and administrators. The procedures to be followed are as follows:

1. Promoting the discussion of curriculum problems at teachers' meetings, public forums, civic clubs, and the like.

2. Organizing, when needed, curriculum societies similar to the national group.

3. Coöperating with the Educational Policies' Commission of the N. E. A. in

that part of their work having to do with curriculum.

4. The dissemination of information on curriculum activities, publications, and researches.

5. Promoting curriculum conferences and clubs in higher institutions.

6. Creating an interest in the *Curriculum Journal*, the organ of the Society for Curriculum Study.

Correspondence may be addressed to Henry Harap, Executive Secretary of the Society, Ohio State University, Columbus, Ohio.

California Curriculum Guides. — The California State Curriculum Commission published in 1936 a *Teachers' Guide to Child Development in the Intermediate Grades* which has all the earmarks of an outstanding piece of work. It is a bound volume of more than 600 pages with chapters on the underlying educational philosophy, organization of the intermediate grades, the teacher, textbooks and instructional materials, social studies, science, reading, oral and written expression, arithmetic, music, art, creative play, and numerous curriculum units reported in detail. Two appendices of 115 pages are devoted to bibliographies on curriculum units and recreatory reading. Ethel I. Salisbury was chairman of the subcommittee in charge of preparation of this guide. A companion volume, *Teachers' Guide to Child Development: Kindergarten and Primary Grades*, appeared in 1930.

Connecticut Study. — Through federal money and workers the Connecticut State Department of Education has completed a one hundred page report entitled "Survey of Recent High School Graduates." Ten thousand students in twenty-eight high schools for the years, 1931-34, were given a personal interview by field workers. Factors concerning age, mobility of residence, curricula completed in high school, education planned and carried out after high school, recreations, books and magazines read, employment problems, and questions of civic interest were the items covered in these personal interviews. The survey reveals a great number of difficulties which young people face after high school graduation and before employment has been attained. The report is principally fact finding and does not include many recommendations for solution of the important problems discovered.

Areas of Human Activity (Mississippi).—A group working in the Curriculum Laboratory at the University of Mississippi, Summer Session of 1936, became interested in discovering what contributions the field of research might make toward Mississippi's program for improved instruction. As a part of this general problem, one small committee made a study of major areas of human activity, together with the individual and group needs and problems belonging to each area. The work was done under the direction of O. I. Frederick and is reported in the form of a mimeographed bulletin.

The deservedly spectacular success of *The Teaching of Reading: A Second Report,* published as Part I of the Thirty-Sixth Yearbook of the National Society for the Study of Education, is one of the real thrills that its publishers have experienced during the past twenty years.

Within a few weeks after shipment had been made to members of the Society and to school administrators who had ordered in advance of publication, quantity orders of from three to seventy copies came in ever-increasing numbers. Such evidence of approval is the best that any book can have. We are sure now that *The Teaching of Reading* can be recommended unreservedly for study by teachers-in-service and in teacher-training classes.

In addition to Part I of the Thirty-Sixth Yearbook, your attention is invited to *International Understanding through the Public School Curriculum,* published as Part II of the Thirty-Sixth Yearbook. The steadying influence of Professor I. H. Kandel and that grand old man, Dr. Paul Monroe, is apparent in this work. Dean Willis Uhl pointed out in his evaluation of the book that, since the ability to read amounts to little — if anything — without the ability to understand, the two parts of the Thirty-Sixth Yearbook should be regarded as two sections of the same subject.

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